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CONTENTS AND DIGEST

Chemotherapy and Tumors. Richard Weil, M.D., New York.....1283
Claims made for beneficial results from use of metals and metalloids in malignant neoplasms. Review of literature. Therapeutic ineffectiveness of these substances. Criteria of therapeutic effects.

The Significance of Bacillus Coli in Pasteurized Milk. L. P. Shippen, M.D., Baltimore.....1289
Presence of *Bacillus coli* usually taken as indicating either imperfect pasteurization or subsequent contamination of pasteurized milk. Details of investigation to test correctness of De Jong and De Graef's observations of certain strains resistant to higher temperatures. Summary of findings.

The Small Heart in Tuberculosis. A Suggested Physiologic Explanation. Francis M. Pottenger, M.D., Monrovia, Cal.....1291
The small heart in tuberculosis a result of compensatory circulatory changes. Reasons for this belief.

The Physician's Responsiblity in Acute Osteomyelitis. James P. Warbasse, M.D., Brooklyn.....1293
Acute osteomyelitis a purely surgical disease, hence the importance of prompt surgical measures. Dangers from pus under pressure. Diagnosis. The too common delay in these cases. Illustrative case reports.

Leukocytosis a Deceptive Sign in Abdominal Hemorrhages. Louis A. Levison, M.D., Toledo, Ohio.....1294
Leukocytosis without infection in abdominal hemorrhage; illustrative case. Hoessli's cases and his experiments to explain this post-hemorrhagic leukocytosis. Summary.

The Normal Differential Leukocyte Count. A Proposed Classification of the White Blood Cells. Louis M. Warfield, M.D., Milwaukee, Wis..1296
Lack of unanimity of nomenclature in differential blood counts. Defects of Ehrlich's classification and need of a more uniform one. Examples showing this. Origin of leukocytes. Non-granular cells; lymphocytes, transitionals and large mononuclears; their different origins. Classification.

Radium in the Treatment of Keloids. Frank E. Simpson, M.D., Chicago..1300
Dosage. Apparatus and technic. Case reports.

Primary Carcinoma of the Liver; Operation for Recurrence Over Seven Years After Primary Operation. Frank C. Yeomans, M.D., New York...1301
Reference to previous report. Later history of case and of operation. Review of published cases. Diagnosis and prognosis.

Chronic Enteric Intussusception Due to Intestinal Tumors. Gilman J. Winthrop, M.D., Mobile, Ala.....1303
Method of occurrence of intussusceptions subsequent to intestinal growths. Case reports.

An Adaptation of Frank's Segment Capsules for Clinical Use. Carl J. Wiggers, M.D., New York.....1305
Inaccuracy of graphic apparatus in common use for recording the form of the pulse. Advantages and construction of the segment capsules for this purpose.

Nature of the Idiosyncrasy to Egg-Protein in Human Beings. Preliminary Note. Jacob Bronfenbrenner, Ph.D., V. L. Andrews, M.D., and Z. R. Scott, Pittsburgh.....1306

(Continued on next page)

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SEE PAGE 3

CONTENTS AND DIGEST—Concluded

Reference to previous articles. Report of a study of an interesting case with idiosyncrasy to egg-protein and confirming the existence of a specific antibody against that substance. Changes in the antitryptic index and their importance. Possibility of preventing anaphylaxis.

Subdiaphragmatic Inflammation, with a Syndrome of Physical Signs and Spontaneous Recovery Without Suppuration. Roger I. Lee, M.D., Boston 1307

Localized suppurations just beneath the diaphragm and their bad prognosis. Report of cases with similar physical signs and diagnosed as suppurative processes, but which recovered spontaneously. Discussion of same and notes of two cases of the same type from records of the Massachusetts General Hospital. Conclusion.

Hereditary Aniridia, an Interesting Family History. S. D. Risley, M.D., Philadelphia 1310

Case history of a family with aniridia through four generations: 117 individuals.

Possible Tuberculin Reaction in the Breast-Fed Child After Diagnostic Dose to the Mother. George Thomas Palmer, M.D., Springfield, Ill. 1312

Suspected dangers of the diagnostic use of tuberculin to the nursing child. Possible element of coincidence in reported cases, and need of caution against drawing unwarranted conclusions.

One Source of Infection in Clean Surgical Cases. Marsh Pitzman, M.D., St. Louis 1313

Lack of boiling or insufficient boiling of instruments as a source of infection.

NEW INSTRUMENTS AND SUGGESTIONS

Blood Transfusion Simplified by Use of New Method and Apparatus. Henry W. Abelmann, M.D., Chicago 1315

A Nasal Dressing Forceps. Otis Orendorff, M.D., Canon City, Colo. 1316

A Convenient Office Screen. William H. Deaderick, M.D., Hot Springs, Ark. 1316

Prevention of Inflammation from Leakage During Intravenous Injection of Salvarsan and Neosalvarsan. Charles A. Mobley, M.D., Rock Hill, S. C. 1316

A New Stay Stitch for Deep Wounds. Edmond Bonnot, M.D., St. Louis 1317

An Autoserosalvarsan Apparatus, Modified from the McCaskey Apparatus and Using the Swift-Ellis Technic. A. W. Stahl, M.D., Denver 1317

Time-Saving Forceps. Carleton Dederer, M.D., Los Angeles 1318

Medicine Pipet Holder. H. S. Reynolds, M.D., New Haven, Conn. 1318

SPECIAL ARTICLES

Practical Pharmacology (Continued) 1318

Typhoid in the Large Cities of the United States in 1914 1322

NEW AND NONOFFICIAL REMEDIES

Description of Articles Accepted by the Council on Pharmacy and Chemistry 1325

Standard Radium Solution for Drinking — Standard Radium Solution for Bathing — Standard Radium Earth — Standard Radium Compress.

EDITORIALS

RECENT WORK ON CANCER: Negative results in chemotherapy and positive results in research on inheritance 1326

NEWER ASPECTS OF METABOLISM: Comparison in different persons under standard conditions of living 1326

RUM IN THE BRITISH ARMY: Horsley's criticism 1328

TYPHUS IN SERBIA: Serious situation from epidemic 1329

ANAL FISTULA AND MALE CLOTHING: Relation of trousers to the disease 1330

THOMSEN'S DISEASE: Explanation of pathogenesis by the hypothesis of increased resistance to the passage of nervous impulses 1330

Current Comment

SPONTANEOUS HEALING OF TUBERCULOSIS OF THE KIDNEY: Question as to frequency in early stages 1331

FEDERAL THRIFT AND CHARITY: Peculiar method of disposing of material condemned as misbranded 1332

LIMITATIONS OF THE REACTION WITH NINHYDRIN: Necessity of caution in the interpretation of findings 1332

THE PATIENT'S OBLIGATION TO THE PHYSICIAN: Reproduction in Portuguese journal of part of the old code of ethics 1332

TYPHOID FEVER IN THE UNITED STATES IN 1914: Its diminution in the large cities 1333

MEDICAL NEWS 1333

MARRIAGES 1342

DEATHS 1342

PROPAGANDA FOR REFORM 1344

Dr. Croley's Specific for Epilepsy.
The Quality of Commercial Blaud's Pills.
Articles Refused Recognition.
Convictions Under Food and Drugs Act.

CORRESPONDENCE 1346

Ancylostoma, not Ankylostoma.
Scholarships for Belgian Students.
Use of the Continuous Warm Bath.
Information Wanted on Inherited Harelip and Cleft Palate.

QUERIES AND MINOR NOTES 1347

Inquiries on the Harrison Law.
Dead Shot Cough Remedy—A Dangerous Amyl Acetate Mixture.
Literature on Quarantine and Fumigation.
Anion and Cation-Nomenclature.
The Baccelli Method of Heroic Treatment.
The Denaturing of Alcohol.
Capitalization of Scientific Names.
Combretum Sundiacum in the Treatment of Morphinism.
The Dose of Codein for Cough.
Bricklayer Rheumatism.

MEDICAL EDUCATION AND STATE BOARDS OF REGISTRATION

Coming Examinations—Oklahoma January Report 1350

BOOK NOTICES 1351

MISCELLANY

Obligations of Patients to Their Physicians—Enter Prayer, Exit Pill — Social Service in Toronto Hospitals — Health Conditions in China — Injuries to Airmen — Suicides in Italy 1353

MEDICOLEGAL

Defects in Information and Trial for Unlawfully Practicing Medicine—Infirmities from Old Age, Insane Delusions, Prejudices, Beliefs, Insanity and Testamentary Capacity—Company Not Liable for Services Rendered to Injured Employee—Funds Not Recoverable by "Company Doctor"—Skill Required of Surgeon and Bases of Damages for Malpractice—Use of Medical Books in the Refutation and Cross-examination of Expert Witnesses—Medical Practice Act Constitutional. 1355

SOCIETY PROCEEDINGS 1357

Coming Meetings.

CURRENT MEDICAL LITERATURE

American Medical Journals

Ulnar Nerve Trouble, Due to Tension from Scar and Its Cure 1357

Estimation of Amino-Acid a-Nitrogen—Metabolic Relationship of Proteins to Glucose—Influence of Natural Fats on Growth—Influence of Protein Intake on Growth—Mechanism of Phagocytosis 1358

Technic for Wassermann Reaction—Immunizing Effects of Tumor Cells—Distribution of Tetanus Bacillus—Syphilitic Leptomeningitis—Cultivation of Virus of Vaccinia—Bacteriology of Appendicitis — Agglutination and Fermentation Among Streptococcus — Diagnostic Value of Schick Reaction 1359

Non-Operative Treatment of Disease of Accessory Sinuses of Nose—Painless Method of Intramuscular Injections of Mercury Salicylate—Effect of Pituitary Substances on Fever Pulse—Modern Treatment of Diabetes Mellitus 1360

Subpectoral Abscess—Boiling Water in Hyperthyroidism — Arteriovenous Anastomosis in Impending Gangrene — Hematoma Following Labor — Intestinal Polyposis — Hemangio-Endothelio-Blastoma of Stomach — Plaiting Round Ligaments 1361

Simple Vaginal Drainage 1362

Foreign Medical Journals

Leprosy — Cerebrospinal Meningitis — Simple Anaerobic Methods 1362

Salt in Bacteriologic Water Analysis—Creatin and Creatinin—Internal Treatment of Yaws—Bacillus Proteus Infection 1363

Treatment of Gunshot Wounds of Humerus—Inheritance of Tuberculosis — Subcutaneous Emphysema in Measles—Malignant Form of Acute Infectious Diseases—Pellagra in Early Childhood—Migration of Foreign Bodies in the Lungs—Osteoplastic Operations Involving the Epiphyses 1364

Furuncles—Exstrophy of the Bladder—Nervous Retention of Urine—Simplified Technic for Intravenous Infusion — Typhus — The Nature of Anesthesia 1365

Body Lice—Inheritance of Acquired Properties — Leukemia and Aleukemia — Vaccination Against Typhoid — Vaccine Therapy of Typhoid 1366

Superposed Infectious Diseases—Artificial Fecundation—Cocain Addiction 1367

Working Hypothesis of Origin of Cancer—Improved Technic for Access to Cerebellopontile Angle — Microscopic Examination of Diphtheria Bacilli—Arterial Hypertension—Incarceration of the Epiglottis 1368

TONICS AND SEDATIVES—BOOKS RECEIVED—THE PUBLIC SERVICE ....Adv. Page 20

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CHEMOTHERAPY AND TUMORS*

RICHARD WEIL, M.D.

NEW YORK

Within the last three years a number of reports have appeared in the medical press which bear on the treatment of malignant growths in human beings by chemical preparations. The most persuasive and the most insistent claims have been made in connection with the colloidal solutions of certain metalloids and metals, notably selenium, vanadium and copper. At the same time a number of drug houses both in this country and abroad have placed on the market proprietary preparations of these substances in various forms, for which the claim is made that they produce striking therapeutic effects and sometimes even cures in malignant neoplasms.

The impulse toward the use and production of this type of preparation is directly traceable to a series of scientific experiments on the tumors of animals, which date back no farther than the year 1911. In that year Wassermann and his co-workers[1] published a report on the treatment of rat tumors by means of the intravenous injection of selenium compounds. This paper received wide notoriety through its enthusiastic diffusion by the lay press. Shortly afterward Neuberg and his co-workers[2] published their observations upon the therapeutic effects of certain metallic compounds. The clinical application of the encouraging results obtained by these authors in animal tumors followed rapidly, and up to the present time a number of papers have appeared in which the claim is made that human tumors also may be favorably influenced through the constitutional use of substances similar to those used by Wassermann or Neuberg. In some cases, use has been made of colloidal solutions of the heavy metals such as copper; in others, selenium compounds have been used, while in a third set of observations the therapeutic agent represents an attempt to combine the virtues of these two types of therapy by employing selenium in colloidal form. As an example of the first class, may be cited the cuprase of Gaube du Gers;[3] of the second, the seleniovanadic ointment of Roemer and the sulpho-selene of Walker; of the third, seleniol and electro-selenium.

Inasmuch as this new type of cancer therapy derives its origin, its justification and its support, in very large measure, from the laboratory results obtained in animals, it is a matter of considerable importance to examine those results with care, in order to determine whether they furnish a satisfactory basis for human therapy, and whether they justify the hopes to which they have given rise.

It is safe to assert that the application of chemotherapy to the treatment of tumors practically dates from the publications of Wassermann. He stated the principle that a rational therapy of tumors must be based on constitutional treatment. It appears evident that local treatment can have only local effects. The lymphatic extensions of tumorous growths, and the often unsuspected metastases in distant organs must of necessity escape the effects of purely local treatment. Hence, Wassermann reached the conclusion that all treatment of cancer which was to be effective, and not merely palliative, must be carried to all parts of the body by means of the blood stream. He therefore introduced the use of intravenous injections in the experimental therapy of rat and mouse tumors. An accidental observation led him to believe that selenium was a substance possessing a high degree of affinity for tumor cells.

In order to insure the penetration of the tumor in the live animal by this substance, however, he considered it essential to combine it with some other highly diffusible substance. This type of substance, which was to act as a carrier of the selenium, he described under the name "cytotrochin," from the Greek word τροχιά, meaning road. For this purpose he selected eosin. The eosin and the selenium were then combined by a method and in a form the details of which have never been published. All that we know of this preparation is contained in the statement that it is very difficult to produce, and that it is extremely unstable and difficult to keep. Mice can be given amounts of from 2 to 3 mg. of this substance in solution. Wassermann experimented with mice inoculated with transplanted tumors of the types of carcinoma and sarcoma. After from three to five intravenous injections of the drug, he notes that the tumors become softer and fluctuate. After still further injections the fluid mass undergoes absorption, and the tumor gives the impression of an empty sac. If it is possible to carry the injections up to the number of ten or twelve, recovery ensues. In such cured animals there remain only the unabsorbed portions of the fibrous capsule. Recurrences were not observed in the cured animals. Wassermann further stated that two spontaneous tumors in mice which had been treated by this method presented favorable results.

Wassermann's original presentation gave few experimental details, and has not been followed by the promised scientific report. From his article it is impos-

* From the Cancer Research Service of the General Memorial Hospital, New York.

* This critical discussion of the status of chemotherapy in tumors was prepared at the request of the Council on Pharmacy and Chemistry of the American Medical Association.

1. Wassermann, Keysser and Wassermann: Deutsch. med. Wchnschr., 1911, p. 2389; Berl. klin. Wchnschr., 1912, p. 4.
2. Neuberg and Caspari: Deutsch. med. Wchnschr., 1912, p. 375. Neuberg, Caspari and Löhe: Berl. klin. Wchnschr., 1912, p. 1405.
3. Gers, Gaube du: La cuprase et le cancer, Paris, 1913.

sible to determine what proportion of his animals were cured and what proportion failed to survive the treatment. From a later paper by Keysser[4] we learn that by far the larger proportion of the animals perished during the treatment in the stage of softening, so that a cure was accomplished in from only 3 to 5 per cent. of the animals. This is a point of great importance, inasmuch as it furnishes an indication of the highly dangerous character of this mode of treatment. Fatal results are attributed by Keysser to the absorption of toxic products from the tumor. This contention, however, is supported by no observations, and it is certainly equally fair to assume that death results from the toxic effects of the compound. A microscopic study of tumors taken from animals undergoing treatment was made by Hansemann. He found that the death of the cells was the result of nuclear destruction.

Within a very few months of Wassermann's publication, Neuberg and Caspari[2] published a paper which was the first of a series of studies on the therapeutic effects of the heavy metals on the animal tumors. They used zinc, platinum, tin, selenium, copper, silver and cobalt in the form of certain complex organic compounds, the composition of which is not revealed. Owing to the fact that intravenous injections of these compounds produced a specific effect on the tumors, they are described as "tumoraffin" substances. Immediately after the intravenous injection of these preparations, there followed a marked hyperemia of the tumor, whereas the remainder of the mouse's body appeared markedly anemic. The hyperemia was often attended by hemorrhage into the tumor. This first stage was succeeded by liquefaction and absorption followed by recovery in favorable cases. The authors failed to state in what proportion of their experiments the animals died, and in what proportion recovery ensued.

The second paper on this subject is by Neuberg, Caspari and Löhe,[2] in which further details are vouchsafed. They state that with the compounds used by them the toxic and the therapeutic doses approximate very closely, from which it follows that the treatment, as with the Wassermann method, results in a very high mortality. Smaller doses produce no therapeutic effect; on the contrary, they seem to act as a stimulus to the tumor, accelerating the normal rate of growth. Spontaneous tumors show similar effects, but no cures are recorded. Only in tumors in which autolysis is active *intra vitam* does the method exert any effect. Consequently the benign primary tumors of animals, such as fibromas, are not influenced by it.

Neuberg and Caspari are to a great extent responsible for the colloidal theory of treatment in tumors. Accepting the observations of Petri and others that the autolytic ferments in tumors are quantitatively greater and qualitatively different from those present in the normal tissues of the body, they venture the assumption that the process of recovery in the experimental tumors of animals is due to the self-digestion of the tumor by these ferments. Ascoli and Izar[5] had shown that such ferments are materially stimulated by the presence of metals, and more especially of metals in colloidal form. This contention is apparently in harmony with the well-established fact that certain colloidal metals of themselves are capable of acting under certain circumstances as ferments. Neuberg and Caspari were at first of the belief that the compounds produced by them circulate in colloidal form. Subsequently they stated that these compounds were crystalline substances, but they assumed, under the influence of the theoretical consideration mentioned above, that these substances are broken up in the tumor and there undergo transformation into the colloid state.

In connection with the preceding observations there are certain other experimental results which require mention. Izar[5] succeeded in curing rat tumors by means of injection of colloidal sulphur. C. Lewin[6] cured subcutaneous mouse tumors with various preparations of gold. Werner and Szécsi[7] produced similar results through a combination of selenium-vanadium with cholin-borate; in these experiments the selenium-vanadium was supposed to be present in colloidal form.

Within a comparatively brief period of time, therefore, it fell to the lot of a number of observers, using strikingly different substances, to produce therapeutic effects amounting in a certain percentage of cases even to cure in the experimental tumors of the lower animals. The various procedures have little in common. Both metals and nonmetallic substances have been employed either in colloidal form or in combination with organic radicals. In some instances a diffusible carrier is combined with the basic substances; in others not. All of the preparations appear to possess a high degree of toxicity, although adequate data on this very essential feature are almost invariably withheld.

Wassermann's results with eosin-selenium were soon critically examined by other observers. Uhlenhuth[8] and Contamin[9] were unable to confirm his observations, but their negative results are attributed by Keysser to the fact that they were not in possession of the proper formula for the preparation of the eosin-selenium compounds as used by Wassermann. Apolant,[10] however, in Ehrlich's name confirmed Wassermann's findings.

The most important critique of eosin-selenium has been contributed by the subsequent investigations of one of Wassermann's original collaborators, F. Keysser.[11] Keysser's publication contains a large number of very careful observations on the various forms of eosin supplied by the German manufacturers, as well as on other matters which cannot here be considered in detail. He finally reached the conclusion that the eosin furnished by the manufacturing house of Sandoz was the most effective for his purposes, inasmuch as it combined the lowest grade of toxicity with the highest capacity for discoloring the tissues. The selenium, he used in the form of seleno-vanadium furnished by Clin of Paris, which was the identical preparation used by Werner and Szécsi in combination with borcholin. The maximum dose of this selenio-vanadium is 0.06 c.c. for each gram of mouse. Eosin, 0.01 gm., dissolved in 0.5 c.c. of physiologic salt solution, is mixed with 0.5 c.c. of the selenio-vanadium. This

4. Keysser: Wien. klin. Wchnschr., 1913, p. 1664.
5. Izar: Ztschr. f. Immunitätsforsch., 1913. Izar and Basile: Berl. klin. Wchnschr., 1913, p. 1312.
6. Lewin, Carl: Berl. klin. Wchnschr., 1913, p. 147; Berl. klin. Wchnschr., 1913, p. 541.
7. Werner and Szécsi: Ztschr. f. Chemotherap., 1913, Orig., i, 358. Szécsi: Ibid., ref., 1913, ii, 1060.
8. Uhlenhuth, Dold and Bindseil: Ref., München. med. Wchnschr., 1912, p. 1782.
9. Contamin, Detoeuf and Thomos: Bull. de l'assn. franç. pour l'étude du cancer, vi, 62.
10. Apolant, H.: VI Tag. der freien Vereinigung für Mikrobiologie., Berlin, 1912. Ref. München. med. Wchnschr., 1912, p. 659.
11. Keysser, F.: Ztschr. f. Chemotherap., 1914, Orig., ii, 188.

mixture is then used for intravenous injections. The results produced by the injection of this mixture are to all intents and purposes similar to those obtained by Wassermann, except that Keysser induced cure in a larger proportion of animals, namely, from 6 to 8 per cent. It is evident from his careful description of his experiments that the treatment is extremely toxic to the animals. The therapeutic dose is considerably greater than one-half the toxic dose. This accounts for the fact that an extremely large proportion of the animals perish during the course of the treatment. The tumors failed to be influenced unless the dose given fell very little short of the fatal amount. Moreover, in order to accomplish a complete cure, at least eight to ten injections must be given, and in some instances not less than fourteen.

Keysser's most important conclusions, however, were obtained by following an altogether different line of procedure. It had been pointed out by Carl Lewin[6] that the therapeutic results obtained from subcutaneous mouse tumors, however encouraging, could not be logically applied to the treatment of human cancers. The subcutaneous transplanted tumors, as is well known, are as a rule limited by a distinct capsule and show no tendency to infiltrative growth. In this particular they present a most striking difference when compared with human tumors. On the other hand, the metastases of mouse tumors in the internal organs present an infiltrative mode of growth and thus approximate very much more closely to the human type of tumors. Keysser therefore determined to test the therapeutic effectiveness of his compounds on tumors implanted in various organs. He developed a technic which enabled him to implant tumors in the liver, the spleen, the kidneys and other parts of the mouse by means of injection through special needles, often without the assistance of a cutting operation.

The tumors so implanted grew rapidly, and within from two to three weeks reached the size of cherry pits. The growth was characteristically infiltrative. Animals with these tumors were then submitted to intravenous injection of the therapeutic agents in exactly the same fashion as the animals carrying subcutaneous tumors. The results, however, were absolutely different. Whereas the subcutaneous tumors invariably showed a much more intense discoloration than the other tissues of the mouse, this feature was entirely lacking in the case of the internal tumors. Softening and liquefaction, which almost invariably follows on the third or fourth injection in the case of subcutaneous tumors, and which is the first symptom of cure, never presented itself in the case of the internal tumors. Their consistency throughout the treatment was indistinguishable from that of the tumors of control animals. The treatment, in fact, appeared to exercise not the slightest influence on internal tumors. There was neither cessation nor retardation in growth, but the tumors continued their normal rate of destructive increase with the production of metastases, leading eventually to the death of the animal either during the course of the treatment or shortly thereafter. Microscopic changes, such as had been observed by Hansemann in the case of subcutaneous tumors, were entirely lacking. No matter in what organ the tumors were implanted, these results remained the same. No matter what type of tumor was employed, whether carcinoma, adeno-carcinoma or sarcoma, the therapeutic outcome was regularly and consistently nil.

These results induced Keysser to determine whether or not eosin-selenium could actually be shown to exercise a deleterious effect on cancer cells outside the body. In order to do this he made a suspension of mouse tumor cells in salt solution and mixed this with the eosin-selenium-vanadium, using the latter in amounts equivalent to three times the fatal dose for a mouse. After the mixture had stood from one to three hours, it was injected either subcutaneously or intravenously into mice in order to test the vitality of the cells. In every instance the injections resulted in the production of tumors which could be in no way distinguished from the tumors produced by untreated cancer cells. In other words, the therapeutic preparation had absolutely no effect on the tumor cells.

In the same way Keysser carried out experiments along the lines inaugurated by Neuberg, using a combination of glycocoll and copper. He also tested the combination of borcholin with selenium-vanadium used by Werner and Szécsi. He was able to confirm the fact that both of these substances produced an unmistakable therapeutic effect on subcutaneous tumors. On the other hand, they were absolutely without influence on the internal tumors. In this respect, therefore, they were entirely comparable with the eosin-selenium compound. The theoretical basis constructed by Neuberg, which rests on the assumption that the metallic compounds stimulate autolytic processes in the tumors, was also subjected by Keysser to destructive criticism.

Finally, Keysser showed that none of these therapeutic agents were effective even in the case of subcutaneous tumors, unless the latter had reached at least the size of cherry pits. If a therapeutic injection were made immediately after inoculation of the tumors, no effect was observed. The tumors grew exactly as in the controlled animals, and died in about the same period of time as they.

All of these facts, which taken together constitute a very remarkable and convincing piece of scientific investigation, permit of but one conclusion. It is quite clearly established that none of the preparations of which the therapeutic effectiveness has hitherto been proclaimed exercise any direct influence on the life or development of the tumor. Under certain very definite and restricted conditions, however, they do appear to produce certain changes in the tumors, and in a small proportion even cures. These results, however, are obtained only in the case of tumors which are subcutaneous in location and not smaller than a cherry pit in size. Keysser's interpretation of the striking differences between the effects observed in the subcutaneous and in the internal tumors is of interest in this connection. He believes that the constant palpation and examination of the subcutaneous tumors, which is prompted by interest in the experiment, produces circulatory changes with hyperemia and hemorrhage. These circulatory changes are responsible for the increased tendency of the injected substances to lodge in the tumors, thereby possibly increasing the tendency to autolysis which the circulatory changes have inaugurated. It is, of course, questionable whether this explanation can be regarded as final. In a series of experiments which I performed many years ago, I was able to show that sodium iodid when injected intravenously accumulates in tumors in larger amounts than in any other tissue of the body in rats. A similar observation has been recorded by Wells, de Witt and

Corper.[12] In the same way I found that various dyes, such as Congo red, when injected intravenously, could be demonstrated in tumors long after the rest of the body had recovered its normal color; the liver alone vied with the tumors in this respect. The dyestuff was invariably sharply localized in the necrotic portions of the tumor. The conclusion seemed obvious that, owing to circulatory conditions or possibly even to chemical conditions, the dye was retained longest in the necrotic parts of the tumor. This effect was unquestionably not due to handling, inasmuch as the animals in my experiments were not palpated from the time of injection until death.

I have, however, had an even more striking demonstration of the same fact. I have given intravenous injections of dyes to patients suffering with various forms of internal tumors, as, for example, cancer of the breast, in the hope of favorably influencing the growths. At operation, the picture presented by the tumor is striking in the extreme. It presents areas of various size which are intensely discolored by the dye. These areas, both to the naked eye and under the microscope, are the necrotic parts of the tumor. The actively growing areas of tumor tissue and all the normal tissues of the organ present their normal color. All of these observations lead to the conclusion that the necrotic areas in tumors either possess a higher affinity for sodium iodid and for the dyes than do the normal tissues, or that these substances are more slowly absorbed from the necrotic areas owing to the circulatory deficiency. Whichever of these explanations be accepted, it is quite reasonable to believe that necrotic areas might well undergo liquefaction under the influence of the various substances which have been used for therapeutic injection. Such a result is, of course, without direct effect on the growth or vitality of the living part of the tumor. This fact is quite clearly evidenced by the experimental data, which show that the internal portions of the tumor might undergo liquefaction and yet the tumors were not cured. Indeed, Löhe, who made microscopic examinations of the tumors treated by Caspari and Neuberg, states particularly, with reference to a tumor which had been subjected to treatment, that "the central portion of the tumor showed softening, while the external margin was composed of actively growing cells." The central portions of implanted tumors are, of course, those which first undergo spontaneous necrosis.

It still remains to explain the small percentage of cures achieved by Wassermann and by Keysser. It does not appear to me that this problem presents any insuperable difficulties. The fact must be emphasized that practically 95 per cent. of the animals die under the treatment, which sufficiently indicates the toxic effects of the agent used. We must remember that transplanted tumors are under all circumstances at a certain disadvantage as compared with the normal tissues of the body. After all, they are implanted on a foreign soil. Their blood supply is impoverished and imperfect. They have a natural tendency to undergo necrosis, and in many cases spontaneous retrogression. It is not strange, therefore, that they should prove in slight degree more susceptible to toxic effects than are the normal tissues of the body.

If we remember that the various therapeutic agents introduced in all probability reach a somewhat higher degree of concentration in the necrotic areas of the tumor than in the normal tissues of the body, an assumption which is entirely in accord with the facts as observed in the case of sodium iodid and of various dyes, we may be quite prepared to believe that this factor is sufficient to induce the destruction of the marginal healthy and living cells of the tumor. The fact that small subcutaneous tumors were found by Keysser to be entirely refractory to the treatment is entirely in accord with this assumption, in view of the fact that tumors of this size present practically no central necrosis. The same explanation holds of the observation previously cited from Caspari that the primary spontaneous tumors of animals do not yield to the treatment. Indeed, he himself states that the treatment is effective only in tumors in which autolysis takes place during life. The word autolysis, however, in this connection is a misnomer and represents a gratuitous assumption; as an actual fact, one is entitled to say only that such tumors undergo central necrosis, in all probability owing to defective circulatory supply. The process is exactly similar to the coagulation necrosis described in the case of tubercles by Weigert. If autolysis occurs it is only secondary to the preceding necrosis.

This explanation, however, is confronted by the fact that the internal tumors produced by Keysser showed no tendency to effect a localization of the dyes, and correspondingly no tendency to be affected by the therapeutic agents. One might be permitted to inquire whether these internal tumors had undergone any necrosis. Keysser unfortunately makes no mention of this matter. It is certainly true that the infiltrative mode of growth of the internal tumors, which is entirely different from that of the subcutaneous implantations, is associated with a much better blood supply and a lessened tendency to undergo necrosis. That such tumors can undergo necrosis, however, is evidenced by certain illustrations given by Carl Lewin in his paper on internal tumors. But such changes usually occur only in advanced stages. To judge from his plates, Keysser worked with relatively small tumors, an assumption which is rendered even more likely by the fact that his injections were undertaken in a fairly early stage of their growth. In this connection I may quote certain experiments of my own on internal tumors.* The implantations made in my experiments were produced by intravenous injections of a tumor suspension into the jugular vein of rats. Such injections resulted almost invariably in the production of a large number of tumors in the lungs, which, as is well shown in the figures accompanying the original article, differed very markedly in size. The smaller of these tumors are composed throughout of actively growing cells, while the large tumors present an area of central necrosis exactly as do the subcutaneous tumors. If such an animal be given an intravenous injection of a dye such as Congo red, it will be found that the larger tumors present an area of central discoloration corresponding to the area of previous necrosis, while the smaller tumors, like the normal tissues, are not colored. Thus, it is clear that the internal tumors implanted in animals are subject to the same laws concerning the distribution of dyes and, of course, other substances as are the subcutaneous tumors. As I have stated previously, an exactly analogous observation has been made in a human breast tumor. In the absence of any contradictory evidence, therefore, I think that it is perfectly justifiable to

12. Wells, H. G., De Witt, and Corper: Ztschr. f. Chemotherap., 1914, Orig., ii, 110.

* Jour. Med. Research, 1913, p. 497.

assume that Keysser failed to achieve a result in the internal growths simply owing to the fact that those growths presented practically no areas of necrosis at the time of his injections.

Another theoretical question which bears closely on the recent therapeutic investigations in human beings concerns the rôle of colloids as such in the procedure. It is quite clear from what has already been said that all experiments with animal tumors have been largely influenced by the belief that metals in the colloidal form exercise a peculiar and characteristic influence on the destruction of tumors. Even where the therapeutic agents have been introduced in crystalline form, as by Neuberg and Caspari, the authors find themselves compelled to assume that the metals are reduced to colloidal form within the tumors. For the latter assumption there is absolutely no evidence; it is due simply to the influence of the colloidal theory. If one critically examines the data on which this theory is based, one is forced to the conclusion that it has practically no established claim to validity. If we grant that colloidal metals have been shown to stimulate autolysis in the test tube, the same fact must be admitted of metals in noncolloidal solution. The experiments, however, are very far from establishing either of these facts satisfactorily. But even were this the case, it is an unjustifiable inference that living tumor cells would be influenced in anything like the same manner as are the dead cells observed in test-tube experiments. As an actual fact, we know from the work of Evans and Schulemann that only the "scavenger cells" of the body take up foreign colloids, and to this class the tumor cells do not belong. Moreover, the form in which metals are introduced into the circulation is not necessarily or even probably the form in which they act on the tissues. Colloidal solutions of the metals are certainly subject to precipitation and other changes on entering the blood. This fact I have shown experimentally in a previous study on colloidal copper.[13] In the same way it is probable, as has been pointed out by Wells, that metals when introduced in crystalloid form may rapidly be altered so that they are carried throughout the body in colloidal form. All of these considerations indicate how unjustifiable is the assumption that colloidal metals exercise a peculiar action on growing tumors. It is hardly surprising that their empiric use has failed to measure up to expectations based on so slim a foundation of fact.

CLINICAL OBSERVATION

Clinicians have not been slow in following the lead suggested by the therapeutic experiments in animals. It is perfectly proper that this should be the case. In dealing with a disease of the character of cancer, in many instances entirely beyond our power to influence, no one can question the advisability of trying any and every agent which holds out the slightest promise. Unfortunately a closer analysis of the animal experiments fails to vindicate even that degree of faith. When one considers the facts which have been analyzed in the preceding discussion, it would appear not only futile but actually dangerous to attempt to benefit cancer sufferers by means of any of the agencies which have been employed in animal experimentation. Nevertheless, the fact remains that a variety of preparations have been used in the human clinic. The various types of preparations may be satisfactorily grouped under four classes, namely:

1. The crystalline salts of selenium.
2. Selenium in colloidal solution.
3. Other metals in colloidal solution.
4. Compounds of metals with organic radicals.

These substances have been administered by injection or by the mouth. In the case of injection, the injections have been made either into the subcutaneous tissues, intramuscularly, or intravenously, or finally, directly into the tumors. Before passing to a further consideration of this subject in detail, it may be well to recall the fact that in the experimental tumors of animals, no matter what preparation has been used, it has been possible to accomplish therapeutic effects only by the use of relatively enormous doses of the medicament, of doses, in fact, which were scarcely lower than the lethal dose. Certain experimenters have noted that smaller doses actually stimulated the growth of the tumors. In the second place, it has almost invariably been found necessary to administer the treatment intravenously, inasmuch as the other modes of administration failed of therapeutic effect. It is quite apparent that a procedure in human beings in any degree analogous to that pursued in animals is entirely impossible. The doses used, with one notable exception to be subsequently mentioned, have invariably been relatively small. Hence it is apparent at the outset that at least one fundamental condition of success in the treatment of animal tumors has been necessarily excluded in the clinical applications.

The salt used by Wassermann is not stated in his original publication. Wolff[14] speaks of it as a sodium salt, whereas Keysser says that it was a combination with potassium cyanid. In only one instance, as far as I am aware, has the sodium salt been used therapeutically in human beings. Delbet[15] states that he employed this salt intravenously in one case, and that its use was shortly followed by death. Unquestionably the salts of selenium are very much too toxic to be used in this way.

The majority of those who have worked with selenium have used it in colloidal form, either preparing it themselves or employing one of the preparations put on the market by the pharmaceutic firms. Of the latter the best known are the electro-selenium of Clin, and the Seleniol of Couturieux. Of those who have made use of selenium in these forms may be mentioned Cade and Girard,[16] Bougeaut and Galliot,[17] Blumenthal,[18] Thiroloix and Lancien,[19] Delbet, Laurent and Bohec,[20] and most extensively of all, M. Touche.[21] All of these authors have described cases of malignant new growths of the most varied character which were treated by these preparations.

The results obtained are fairly concordant. The intravenous injection of the preparation produces but slight disturbance. There is leukocytosis, a moderate rise of temperature, and not infrequently a chill. Otherwise the substance seems to possess no toxicity.

13. Weil, Richard: The Effects of Colloidal Copper with an Analysis of the Therapeutic Criteria in Human Cancer, THE JOURNAL A. M. A., Sept. 27, 1913, p. 1034.

14. Wolff: Die Lehre von der Krebs Krankheit, iii, b, 1913.
15. Delbet, P.: Bull. de l'Assn. franç. pour l'étude du cancer, 1912, v, 121; ibid., 1913, vi, 85.
16. Cade and Girard: Bull. Soc. méd. d. hôp. de Lyon, 1912, xi, 397.
17. Bougeaut and Galliot: Clinique, Paris, 1912, vii, 501.
18. Blumenthal, A.: Jour. méd. de Bruxelles, 1912, xvii, 325; Presse méd. belge, 1913, lxv, 919.
19. Thiroloix and Lancien, A.: Bull. et mém. Soc. méd. d. hôp. de Paris, 1912, xxxiii, 197.
20. Laurent, M., and Bohec, J.: Med. Press and Circular, 1912, xciv, 461.
21. Touche, M.: Bull. et mém. Soc. méd. d. hôp. de Paris, 1913, xxxv, 451.

The effects produced on the tumors have almost invariably been described as encouraging. Touche, who treated twenty-seven cases in this way and has described each case in detail, states that under the treatment the surface of the tumors, if ulcerated, became cleaner and healthier; the tumors became softer; the rate of growth was arrested, and there was relief of pain and of the accompanying functional disturbances; often, too, there was a gain in weight and an improvement in general wellbeing.

Touche concludes his article with the statement that "it is certain that the effect is not curative, but it is actually palliative." Delbet, on the other hand, states that he has seen no beneficial effects from the use of colloidal selenium injected intravenously. In the discussion on Delbet's paper, Ledoux-Lebard states that he has observed nothing from selenium further than the temporary improvement which is shown by almost all cancer cases on the application of any new therapeutic measure. In one or two instances the claim is made in the literature of an actual cure of malignant growth through the use of selenium. Such for example is the case described by Blumenthal. From the clinical description this might have been a cancer of the tongue, and was judged to have been such in view of the negative Wassermann. No microscopic examination was made. Salvarsan was given. The patient recovered. It is clear that instances of this type cannot be accepted as beyond criticism, and it is safe to say that nothing more convincing in the way of actual cure is offered in the rather voluminous literature on the use of selenium.

Numerous compounds of selenium, some of them claiming to circulate in colloidal form, have been described, and have been put on the market for use in malignant disease. Such are Walker's sulpho-selene, and selenio-vanadium, which has been prepared in the form of an ointment by Schering and Glatz. These preparations lay claim to the same palliative effects which have been previously described for colloidal selenium.

Of the other metals in colloidal form, chiefly silver and copper have come into use. Colloidal silver was first recommended for malignant growths by Vogel. It is obtainable on the market in proprietary form under the name of fulmargin, and also as electrargol. Recently Rohdenburg[22] has made a careful study of the effects of colloidal silver in experimental and in human tumors, and finds that they have no value. Colloidal copper has been used in recent times for the same purpose by Gaube du Gers and by others. I have recently examined the effects of colloidal copper on malignant tumors in man, and have been unable to find that it has any therapeutic value. Furthermore, a study of the distribution of the copper in tumors obtained at operation or by necropsy from individuals so treated failed to show that the copper had been deposited therein.

Finally, preparations similar to those used by Werner and by Caspari in animals have also been used in human beings. In these cases also the authors have been able to record palliative effects on the tumor, but in no instance cures.

We have seen that it has been quite impossible to duplicate in human beings the therapeutic technic employed in animal experiments. We have seen further that the use of a modified technic in animal experimentation has never been productive of favorable results even at the hands of enthusiastic adherents. In striking contrast to these conclusions are the observations made in human therapeutics. For every type of preparation described in the preceding paragraphs, the claim has been made practically without exception that it exercises a markedly beneficial effect on malignant disease in the human being. Not only are the subjective symptoms alleviated, but also the tumors appear to become cleaner and softer; the rate of growth is retarded; necrosis and metastasis are prevented, and inoperable tumors become operable. How are we to interpret these observations? How are we to explain the fact that they are the almost invariable accompaniment of the most diverse methods of treatment? I have already quoted the statement of Ledoux-Lebard that every therapeutic novelty appears to exercise a favorable effect on cancer cases. The same fact has been observed in a variety of other diseases, such as locomotor ataxia.

In order to arrive at a safe and reliable estimate as to the value of any new or experimental procedure in cases of cancer, it seems advisable to accept certain definite therapeutic criteria by which the cases are to be judged. In the absence of such a method, alterations in symptoms which are actually of no real value or importance receive undue emphasis. The natural course of the disease is associated with such fluctuations that a sanguine therapeutist can gain some encouragement from even the most hopeless cases. Hence it follows that every mode of treatment has found adherents. The market is flooded with cancer drugs, and cancer charlatans flourish in the most highly educated communities. Unfortunately even well trained, honest and reputable physicians have fallen victims to this fallacy, and have lent their names to the support of modes of treatment which in reality produce no determinable effect on the natural evolution of the disease. It was the desire to combat this unfortunate tendency which led me some time ago to attempt to establish a reliable set of criteria of therapeutic effects in cancer. These were embodied in an article[18] which appeared two years ago, and I may be here permitted to quote them *in extenso:*

CRITERIA OF THERAPEUTIC EFFECTS

In determining the effects of any given mode of treatment on a tumor, a variety of criteria may be relied on. Circulatory changes in the tumor, the relief of pain and the restoration of a secondarily impaired function are certain of the criteria on which stress has been laid by the majority of observers in the past. Important as are these criteria in determining the progress of purely inflammatory processes, it is unquestionable that their value in judging of the effects of therapeutic methods when applied to malignant disease is open to criticism. It is a curious and interesting fact that almost every therapeutic claim made in recent years in connection with cancer has included among its virtues the relief of pain. This is true of vaccination with cancer tissue, of Hodenpyl's method and of many others. In view of this very general effect, not much stress can be laid on this symptom, and it is probably fair to assume that in the great majority of these cases the result is in no small measure psychic. The improvement of function is also largely a subjective phenomenon, and as such requires most careful criticism. Osler relates that he has known a patient with gastric cancer to be relieved of digestive disturbances and to gain 18 pounds in weight as the result simply of the visit of a sanguine consultant who denied the presence of a tumor. Improvement in the ability to chew food, to articulate words or to move a limb are phenomena familiar to those who attempt to treat cases of cancer. The victims of this disease

22. Rohdenburg, H.: Jour. Med. Research, 1915, xxvi, p. 331.

seem to be in a very high degree "suggestible" and impressionable and respond nobly to every therapeutic effort.

Circulatory changes in tumors offer an interesting group of clinical symptoms. The observation has often been made, especially in ulcerated new growths, that treatment is associated with swelling, peripheral hyperemia, and an altered character of the discharge. In spite of the fact that there is no reasonable relationship between this congeries of symptoms and the actual cure of the tumor, they generally receive considerable emphasis and are cited as an indication of the specific local action of the agent employed. It is also true, however, that the growth may continue to advance in spite of their presence. It is of some importance to inquire into the mechanism which produces these circulatory changes and into their clinical interpretation. It is a well-known fact that many drugs, when introduced into the body either by the mouth or through the skin, are excreted not only by the normal channels of elimination, such as the kidney or the intestine, but also from such ulcerated surfaces as may be present on the body. This is easily shown to be true, for example, of certain of the anilin dyes, which, when introduced by way of the veins, produce an intense discoloration of the dressings over ulcers. It is likewise true of certain of the metals, such as arsenic. In order to understand the series of events previously enumerated it is therefore only necessary to assume that the therapeutic agent is excreted from the ulcerated surface of tumors. If an irritant, it will tend to produce hyperemia of the margins of the ulcer, and an increase of the secretions. If an astringent, however, it may produce just the opposite of these effects. Such a result, however striking, is purely accidental, and has no necessary bearing on the growth or destruction of the tumor itself. It constitutes a symptom on which no reliance should be placed.

Excluding from consideration all of these secondary factors, we may conclude that the observation of the size of the tumor itself is the sole criterion on which we can place reliance in judging of the effect of therapeutic measures. This implies, in the first place, that a tumor must be accessible to fairly accurate measurement. Tumors of the uterus, for example, and intra-abdominal growths will only exceptionally fall into this class. In the second place, indirect evidence of a decrease in the size of tumors, such as is afforded by the increased permeability of obstructed passages, as in the case of tumors of the esophagus, pylorus or intestine, must be accepted only with great reserve. Remissions in the obstructive symptoms characteristic of such tumors are a frequent feature of the normal evolution of the clinical history of such growths. The relief of obstruction, however, may be due either to necrosis of the obstructing portions of the tumor, while the remainder continues to grow progressively, or to a relief of the accompanying muscular spasm. Finally, evidence of decrease afforded by the roentgenogram is not sufficiently exact in most cases to afford ground for so important a conclusion as that at present in question.

Not only must there be unquestionable evidence, however, of the diminution in size of the tumor, but this diminution must be of a kind not ordinarily attributable to the natural evolution of the tumor. . . . It is safe to say that multiple tumors offer enormous difficulties in the matter of interpreting therapeutic results. At present we have in the wards of the hospital a patient with multiple metastatic carcinomas of the skin. For several months we have at intervals made accurate measurements of certain of these tumors and have found that some have undergone retrogression, others have entirely disappeared, while still others have continued to grow steadily. In the case which afforded the ascitic fluid used in Hodenpyl's experiments, many of the lymphatic metastases underwent complete retrogression, while the metastatic process in the liver, as was demonstrated at necropsy, increased progressively, and ultimately almost destroyed that organ. Thus, in multiple carcinosis, the retrogression of individual nodules is no indication that therapeutic intervention has produced an improvement.

I shall not delay to emphasize those variations in the size of solid tumors which accompany hemorrhage and its absorption, edematous swelling, necrosis in the depths, and other familiar factors which clinically simulate, or induce, the softening and the reduction that are so often attributed to therapeutic interference. But it is important to draw attention to a similar feature in that type of superficial epithelioma known as rodent ulcer. These new growths not infrequently advance at one point of the periphery, while they recede at another, and thus cicatrization and contracture may simulate a partial recovery. This effect is due in part to alterations not in the growth itself, but in the accompanying ulcerative process. The secretions from the growths, especially if confined under dressings, may have eroded and destroyed the surrounding skin, and it is tempting to interpret a recession of the associated ulcerative disease as an indication of a favorable effect on the new growth. It is unquestionably this aspect of rodent ulcers which plays so generously into the hands of the numerous nostrum venders for this disease.

In brief, the demonstrable reduction in size of a tumor, of a kind not to be attributed to the natural processes of evolution of that tumor or of its associated lesions, is the one essential feature of effective therapeutic intervention.

When the various methods of treatment which have been discussed in this paper are judged by the standard advocated above, it is apparent that none of them can lay claim to therapeutic effectiveness. The modifications of the disease attributed to them are modifications which occur spontaneously in a very large proportion of cases as a result of the natural evolution of the disease process. This is a fact which cannot be too strongly emphasized. Owing unfortunately to the hopeless character of cancer, men are not prone to study with care all the lesser changes which the disease and the patient present under ordinary conditions; but when a "cure" is under investigation, the patient and his medical attendant note every apparent improvement with painstaking attention and enthusiasm. As a result, some evidence of improvement in treatment is entered on the books.

970 Park Avenue.

THE SIGNIFICANCE OF BACILLUS COLI IN PASTEURIZED MILK*

L. P. SHIPPEN, M.D.
BALTIMORE

The presence of *Bacillus coli* or of any other nonsporulating gas producer in pasteurized milk is usually taken to indicate either improper pasteurization or subsequent contamination of the milk. For according to most authorities the thermal death points of *B. coli* and similar organisms are below the temperature of pasteurization. Thus Kolle and Wassermann[1] give the following summary of the various findings for *B. coli* up to the year 1903:

C	Minutes	
62-63	1	Von Geuns
59	5	Von Geuns
60	15	Kitasato
60	10	Weisser
60-61	5	Chantemesse and Widal
59	15	Chantemesse and Widal
55-60	120	Frankel

However, more recently De Jong and De Graef[2] have described seven strains of *B. coli* which survive 65 to 67 C. (149 to 152.6 F.) for thirty minutes in milk or broth. These strains would not be killed by the degree of heat commonly used in pasteurization and

* From the Laboratory of Bacteriology and Hygiene, Johns Hopkins University.

1. Kolle and Wassermann: Handb. d. Path. Mikroorg., 1903, ii, 385.
2. De Jong and De Graef: Quoted by Rullmann, Centralbl. f. Bakteriol., Part 2, 1914, xli, 269.

in consequence the presence of *B. coli* in pasteurized milk could no longer be taken as an index of improper pasteurization or subsequent contamination.

With the object of confirming these observations I examined samples of the various brands of milk pasteurized in Baltimore, twenty-two in all, and with one exception succeeded in isolating some aerobic, nonsporulating gas producer from every sample. Thirty-one strains were recovered along with thirteen strains from unpasteurized milk of excellent quality and their thermal death-points were determined.

The method employed was to transfer by means of a sterile pipet 1 c.c. of the milk from below the cream line to 2 per cent. dextrose broth in a fermentation tube. Then the milk in the original container and the fermentation tube was incubated. The following day gas usually would appear in the fermentation tube. From this preparation and from the cream on top of the milk specimen plates of dextrose-litmus agar were made. After from twenty-four to forty-eight hours incubation red colonies were replated, recovered and identified.

In this way there were isolated from the cream of the pasteurized specimens two strains of *B. coli communis*, one strain of *B. coli communior*, one strain of *B. coli communis immobilis*, two strains of *B. cloacae*, one strain of *B. coli liquifaciens*, and five of *Bact. aerogenes*. From the milk were recovered five strains of *B. coli communis*, four strains of *B. coli communior*, one strain of *B. coli communior immobilis*, seven strains of *B. cloacae*, and two of *Bact. aerogenes*. From the unheated milk were isolated four strains of *B. coli communior* and one of *Bact. aerogenes*, and from the unheated cream eight strains of *Bact. aerogenes*.

The majority of these organisms gave typical reactions in the usual culture mediums and could be identified easily. However, three strains of *B. cloacae* gave no gas or acidity in lactose broth when isolated, but later acquired this power. In addition, many of the cultures of *B. coli* showed no motility even in six-hour broth cultures when first recovered. But after about three months' artificial cultivation the greater number acquired this power and in young broth cultures showed violent motility. In two strains, however, no independent movement was ever observed. Yet they show no capsule when stained by the same method which was employed successfully in demonstrating the capsules of the various cultures of *Bact. aerogenes* isolated. In consequence these two strains could be identified neither as *Bact. acidi lactici*, *Bact. aerogenes*, nor *B. coli*, but resembled rather the *B. coli immobilis* of Germano and Maurea with which they were classed.

As soon as recovered and identified as gas producers, the various cultures were tested roughly as to their ability to withstand a temperature of 60 C. (140 F.) for fifteen minutes. The method employed was to transfer the organisms to peptone solution in test tubes and immediately heat in the water-bath for fifteen minutes. Then the tubes were cooled rapidly and incubated. At the end of from twenty-four to forty-eight hours turbidity indicated survival. Transfers were then made to dextrose broth in fermentation tubes and gas formation after incubation was taken to mean the survival of the organism tested. In my experience this method is inaccurate and misleading, but it has the advantage of being easy to accomplish and was used in this work merely to divide the organisms into two classes, one capable of surviving 60 C., the other killed by this temperature.

Of the thirty-one strains of gas producers recovered from pasteurized milk, eleven survived this process, twenty were killed. None of the thirteen strains isolated from unheated milk survived. Of the eleven strains which 60 C. failed to destroy, four were classed as *B. coli communis*, three as *B. coli communior*, one as *B. coli communior immobilis*, two as *B. cloacae*, and one as *B. coli liquifaciens*. Seven of these cultures were recovered from the milk, four from the cream.

As a control to these results about 10 c.c. of each specimen of milk examined was transferred by means of a sterile pipet to a sterile test-tube and heated in the water-bath for fifteen minutes at 60 C. This preparation was incubated and on the following day 1 c.c. was transferred to dextrose broth in the fermentation tube in an effort to recover *B. coli*. No gas was produced by this means in the dextrose broth however, and no culture of *B. coli* could be recovered from the milk so heated in the laboratory.

On the completion of the preliminary work the thermal death-points of the various cultures were determined in the following manner adapted from the method of Sternberg:[3]

First, small test-tubes were procured with a diameter just sufficient to admit the ordinary glass rod used in transferring. In these tubes bulbs were blown capable of holding about 2 c.c. Then they were filled with Dunham's peptone solution, corked with cotton, and sterilized in the autoclave. When cooled they were inoculated from twenty-four hour agar cultures of the strains to be tested. No definite amount of the organism was transferred, but roughly as much as could be taken conveniently on the end of the platinum wire. These preparations were sealed by melting the glass mouths in the flame of the Bunsen burner. Next they were weighted and immersed deeply in a water bath heated to the desired temperature. They were kept in this fashion fifteen, and in some cases, thirty minutes, and then were immersed in cold water. When cooled the ends of the tubes were filed and broken and the contents expelled into test-tubes of sterile litmus milk by means of gentle heat applied to the bulb. The milk tubes were incubated and on the appearance of acidity transfers were made to dextrose broth in fermentation tubes. The evolution of gas in these was taken usually to indicate the survival of the original culture tested, but in the case of those strains showing high thermal death-points the organisms were recovered from the milk and identified. Two thermometers were used in the experiments, one touching the bottom of the water-bath in contact with the bulbs; the other suspended in the water. The Bunsen burner used was kept with a small flame and was placed at the side away from the bulbs. In spite of these precautions Sternberg's limit of error of two degrees was taken as a fair figure.

The various strains first were tested at 60 C. for fifteen minutes. Those surviving this process were subjected to 61 C. for fifteen and thirty minutes, and then at each experiment the temperature was raised one degree until none survived. Those killed by 60 C. were subjected to decreasing degrees of heat for fifteen minutes until all survived this treatment. In this way the following results were obtained:

3. Sternberg: Text-book of Bacteriolgy, New York, William Wood & Co., 1892, p. 147.

STRAINS FROM PASTEURIZED MILK

	Thermal Death-Point, C.	
B. coli communis	15 Minutes	30 Minutes
Strain 30	+ 66-67	+ 62-63
Strain 6	+ 65-66	+ 63-64
Strain 11	+ 65-66	+ 63-64
Strain 12	+ 62-63	+ 60-62
Strain 26	+ 58-59	
Strain 2	+ 57-58	
Strain 14	+ 57-58	
B. coli communis immobilis		
Strain 1	+ 57-58	
B. coli communior		
Strain 29	+ 67-68	+ 64-65
Strain 16	+ 64-65	+ 62-63
Strain 34	+ 64-65	+ 62-63
Strain 7	+ 59-60	
Strain 13	+ 58-59	
B. coli communior immobilis		
Strain 33	+ 63-64	+ 62-63
B. aerogenes		
Strain 4	+ 59-60	
Strain 8	+ 59-60	
Strain 19	+ 59-60	
Strain 20	+ 59-60	
Strain 27	+ 59-60	
Strain 31	+ 59-60	
Strain 28	+ 58-59	
B. cloacae		
Strain 18	+ 63-64	+ 60-62
Strain 10	+ 60-61	— 60
Strain 9	+ 59-60	
Strain 17	+ 59-60	
Strain 15	+ 57-58	
Strain 32	+ 57-58	
Strain 5	+ 54-55	
Strain 21	+ 53-54	
Strain 25	+ 53-54	
B. coli liquifaciens		
Strain 22	+ 60-61	— 60
From Unheated Milk		
B. coli communior		
Strain 109	+ 58-59	
Strain 112	+ 56-57	
Strain 104	+ 54-55	
Strain 114	+ 54-55	
B. aerogenes		
Strain 105	+ 59-60	
Strain 115	+ 59-60	
Strain 108	+ 58-59	
Strain 107	+ 57-58	
Strain 103	+ 56-57	
Strain 111	+ 56-57	
Strain 113	+ 56-57	
Strain 106	+ 55-54	
Strain 110	+ 55-54	
Control		
Stock B. typhosus	+ 54-55	

SUMMARY

Of the thirty-one strains of various gas producing aerobes isolated from pasteurized milk, eleven possessed a thermal death-point above 60 C. for fifteen minutes. Three of these survived 63 C. for thirty minutes and three others survived 62 C. for the same length of time. One strain, identified as *B. coli communior*, possessed a thermal death-point of 68 C. at fifteen minutes and 65 C. at thirty minutes. This was the most resistant strain of *B. coli* recovered. The least resistant in this group were two cultures obtained from unheated milk which were killed by an exposure to 55 C. for fifteen minutes. The highest thermal death-point of *B. cloacae* was found to be 64 C. for 15 minutes, 62 C. for thirty minutes. The lowest belonged to two strains which originally failed to ferment lactose broth but which later acquired this power. These cultures were killed on being subjected to 54 C. for fifteen minutes. No culture of *Bact. aerogenes* isolated survived 60 C. for fifteen minutes. Different strains of this organism varied comparatively little in regard to their thermal death-points. All those recovered from pasteurized milk were killed by 59 or 60 C. for fifteen minutes. Two strains from unheated milk failed to survive 56 C. for the same length of time.

CONCLUSIONS

1. As observed by De Graef and De Jong, certain strains of *B. coli* are not killed by a temperature exceeding that commonly used in pasteurization.

2. The thermal death-point of this and similar organisms is not a constant quantity but varies for different strains of the same bacterium. In the case of *B. coli communior* this variation was found to be as great as thirteen degrees.

3. The presence of *B. coli* in pasteurized milk cannot be taken as an index of its improper pasteurization or subsequent contamination.

THE SMALL HEART IN TUBERCULOSIS

A SUGGESTED PHYSIOLOGIC EXPLANATION

FRANCIS M. POTTENGER, A.M., M.D., LL.D.

MONROVIA, CAL.

The small heart, often found in tuberculosis, has long been looked on as being a predisposing factor in this disease. That small hearts and hearts smaller than normal are common in tuberculosis, and this, in early as well as late tuberculosis, seems to be well-established. Ordinary methods of examination, as well as orthodiagraphic records of excellent observers,[1] prove this to be a fact.

It will be recalled that Brehmer,[2] the founder of modern phthisiotherapy, being convinced by the researches of Louis, Rokitansky and Beneke that the small heart was a predisposing cause of tuberculosis, founded his method of treatment on the idea that the cure of the disease could best be furthered by strengthening and increasing the capacity of the small heart. Exercise, particularly graduated hill climbing, was a very important part in his program.

The small heart in tuberculosis has been accounted for by Martius[3] as being due to constitutional weakness and as being associated with narrowing of the arteries. Grödel[1] says that it is an expression of malnutrition. He also says that the small heart is found in those suffering from enteroptosis and particularly those having narrow chests. If the small heart is found in tuberculosis, enteroptosis and those having narrow chests, it is well to make inquiry in order to find out whether or not there are factors affecting the

1. Grödel: Lehman's Med. Atlanten., München, 1909, vii.
2. Brehmer: Die Etiologie der chronischen Lungenschwindsucht, 1885.
3. Martius: Pathogenese innere Krankheiten.

circulation which are common to these three conditions, and to see if such factors could in any way alter the size of the heart.

That not all persons with small hearts develop tuberculosis is evident. Then it is necessary, if we are to maintain the theory that the small heart is a predisposing factor to tuberculosis, to explain why it is predisposing in one individual and not in another.

My conception of clinical tuberculosis is that it is a pure accident. Practically every one is infected with tubercle bacillus, as is shown by both clinical observation and pathologic examination. Whether the disease shall go on to an immediate active disease or assume a quiescence, at least temporarily, is largely a matter of suitability of the soil (whatever that may mean) and the size of the dose of inoculating bacilli. Whether the disease, which quiets for a time, shall ever become active again, or remain quiescent, or heal, depends on factors which we do not understand, although the number of bacilli in the inoculation is probably a factor. That the bacilli do multiply and form metastases in and about the apices of the lungs of a large portion of adults is now well known. This amounts to 63.4 per cent. of Hart's series of cases and 71.2 per cent. of Naegeli's. Whether this metastatic infection shall take on itself activity and produce clinical pulmonary tuberculosis does not necessarily depend on an undernourished condition, for the well-nourished and those of stocky build are often victims of clinical tuberculosis. The small heart theory of the cause of tuberculosis was propounded long before the bacillus was discovered, but its disappearance has been exceedingly slow even though we now know the disease to be an infection. We know the infection is not a result of the small heart, for practically all have it, and it would be exceedingly difficult for us to show a definite causative relationship between the active clinical disease and the small heart. It does not seem rational that the size of the heart should be the determining factor in these cases.

It seems to me that a more rational explanation of the small heart in tuberculosis is that it is a result of compensatory circulatory changes; and that this is probably correct is suggested by the fact that the same small heart is found in enteroptotic individuals.

This explanation is based on well-known physiologic facts. The most important direct forces in the circulation of the blood are the impetus given the column of blood by the heart during systole and the elasticity of the vessel walls. The most important accessory mechanism is the pumping effect on the returning blood exerted by the inspiratory enlargement of the thoracic cavity. Every inspiration increases the negative pressure within the thoracic cavity, dilating the large veins and heart chambers. The amount of dilatation depends on the length of the inspiration and the degree of expansion of the lungs. There is no other mechanism that can take the place of this accessory action of the inspiratory act in its effect on the circulation. If inspiration is interfered with, the suction action on the intrathoracic vessels will be lessened and a diminished amount of blood will be delivered to the heart in a given time. The result of this is a consequent decrease in the total content of blood in the chambers of the heart and a decrease in the output of blood at each systole, which results in a relatively small amount of blood in the arteries and a damming back of blood in the systemic veins.

This condition is found in tuberculosis, and also in enteroptosis and other conditions which interfere with the contraction of the diaphragm and consequently with the freedom of the inspiratory act. Such patients have a relative arterial anemia and appear pale in consequence of it. On the other hand, they have an excessive amount of blood in the veins, particularly the splanchnics and the liver.

The heart usually delivers from 50 to 100 c.c. of blood at each contraction. In order for a given heart to deliver the normal amount of blood at each systole, the circulatory system must be in perfect functionating condition. The heart and arteries must be in a state of perfect compensation, and an adequate amount of blood must be delivered into the right auricle.

Inasmuch as this delivery of blood to the heart depends on a normal inspiratory expansion of the chest, any disturbance in the inspiratory act will decrease the amount of blood sucked into the heart, and if the heart and vessels are not able to compensate for this in some manner, there can be but one result, a lessened amount of blood in the chambers of the heart and a lessened amount delivered at each contraction.

Since the conditions which interfere with inspiration in tuberculosis are constant, at least extending over a long period of time, the heart must adapt itself to a smaller intake, a smaller content and a smaller output of blood for a like period. If the circulation is properly balanced, each chamber of the heart contains the same amount of blood, and the result is that by adapting itself to this smaller quantity of blood the heart must, of necessity, become smaller itself.

That the heart is an organ which adapts itself to various conditions there can be no doubt. Moritz[4] has shown that there is a decided reduction in the size of the heart in the standing as compared with the reclining position. He has shown this in animals as well as man. Common observation shows the heart as enlarging and decreasing in size under pathologic conditions. We are justified in believing that any constant factor or any factor extending over a prolonged period of time which decreases the amount of blood delivered to and consequently the total amount of blood contained within the cavities of the heart at any one time would be met by a compensatory contraction of the organ as a whole. This is the condition in tuberculosis and enteroptosis. This may also account for the reduction in size of the arteries in the same conditions, as noted by certain pathologists.

The factors which interfere with the full expansion of the thoracic cavity come early in tuberculosis. They may be either the changes in the pulmonary tissue itself or the pleural adhesions which are often present (these are more potent factors as the disease progresses) or the reflex motor disturbance of the muscles of inspiration, particularly the diaphragm. Later these factors are exaggerated and others enter.

It seems logical that these hindrances to inspiration might produce:

1. A diminution in the size of the heart.
2. A diminution in the size of the arteries.
3. A relative arterial anemia with its consequent (*a*) lowering of blood pressure; (*b*) apparent anemia, which examination fails to confirm, and (*c*) congestion of systemic veins, particularly those of the abdominal organs.

4. Moritz: Ueber functionelle Verkleinerung des Herzens, München. med. Wchnschr., 1908, No. 14.

THE PHYSICIAN'S RESPONSIBILITY IN ACUTE OSTEOMYELITIS *

JAMES P. WARBASSE, M.D.
BROOKLYN

For twenty odd years the surgeon has been scolding the physician for his tardiness in recognizing and promptly referring for surgical treatment such diseases as appendicitis, gastric and duodenal ulcer, tuberculosis of the kidney, cancer of the stomach, perforating typhoid ulcer and ectopic gestation. There have been three reasons for the justification of the physician's tardiness. The first is that the disease is often difficult to recognize. The second reason is that many of these patients recover under medical treatment. The third reason is that some do badly under surgical treatment. This is a combination of circumstances hard for surgery to contend against.

Acute osteomyelitis is different from these diseases. It is in a class by itself. It is wholly surgical. The physician has just one function in relation with it; that is, to recognize the disease and without a minute's delay to place it in the hands of the surgeon. In all of the first-mentioned diseases, the physician can apply some alleviatory measure. In acute osteomyelitis there is but one thing for him to think of applying, and that is surgical relief. Without surgery it is a serious disease even in its mildest form; with surgery, it is hopeful even in its worst stages. There is one treatment, and that is operative.

As the bacteria are brought to the bone by the blood stream, a general infection may be said to exist before the osteomyelitis begins. Every abscess or other focus of staphylococcus infection in other parts is a potential cause of osteomyelitis. When staphylococci are deposited in the soft tissues of the body an abscess forms with yielding walls and elastic environment; but when staphylococci are deposited in the bone marrow all of the phenomena of inflammation must develop within an unyielding bony case. Swelling is one of the salient features of inflammation. It means expansion to accommodate the dilated vessels and the outpouring of serum and leukocytes. It is the saving and essential characteristic of inflammation. But in osteomyelitis it cannot take place; the inflammation is hampered in its expression; it is locked in a vise. As soon as the limit of expansion in the marrow is reached, something must happen. The products of inflammation next exert themselves on the internal blood supply of the bone. The vessels are quickly occluded, and in a few minutes the fate of the bone is sealed.

Not only is the nourishment of the bone lying within the periosteum cut off and circulation supplanted by stasis and coagulation, but all of this dead structure is rapidly infected. Two results are inevitable: necrosis and abscess. The pus is still retained under pressure until the periosteum is penetrated. The bone is dead material, either to be removed by operation or eroded and dissolved away.

If there is any one dangerous thing in the animal organism it is pus under pressure. This exists in acute osteomyelitis as in no other disease. It gives rise to pain and aseptic absorption. Not only do the ptomains of infection enter the blood, but the internal pressure also forces bacteria into the blood stream. This means secondary invasion of the rest of the medulla of the same bone, and then metastatic deposits of bacteria. This virulent general infection threatens bones, joints, meninges, the valves of the heart and every other structure of the body. For this reason osteomyelitis is so commonly characterized by the appearances of infection in other bones in other parts of the body, and by septic thrombosis. These new foci may continue to appear for a period of a year or more.

Loss of life is a common result; permanent disability may be expected in a large proportion of cases; and destruction of bone always. It is one of the most serious diseases; and once begun, the end can never be predicted, unless prompt surgical treatment is applied. This treatment consists in opening the bone by trephine or chisel to relieve the pressure and provide drainage. If the opening is made at that part of the bone nearest to the pain and tenderness it will be found to expose the infected zone. The free exposure of the inflamed marrow and the introduction of a rubber drain is simple and sufficient.

Here is a serious disease for which there is but one treatment. There are no two surgeons who disagree. No two surgeons apply different methods. Not only is this the case, but it is furthermore true that when this treatment is applied early the disease is cured, the destruction of bone prevented, and the patient saved from the dangerous sequels of metastatic infection. The final unique feature of the disease is that its recognition is made positive by certain signs which are characteristic. Thus the diagnosis is easy, the treatment simple and the cure effective. No set of circumstances more fortunate combine in the case of any other grave surgical disease.

Two symptoms suffice for diagnosis. Pain of rapid onset, usually in the end of a long bone, and fever, often high, are characteristic. The blood picture and the prostration of serious infection are present. Local tenderness follows the pain. Redness and swelling appear only after the moment for advantageous treatment is long passed. The tibia, femur and humerus are most commonly attacked; but any other marrow bone may be the first. The Roentgen ray is of no value in early diagnosis.

This is a common disease. It is especially prevalent among the poorly nourished. Therefore, the children of the working class, one-fourth of whom in our great cities suffer from undernourishment because of the advantage which the privileged property-owning class takes of them, are its chief victims. Osteomyelitis belongs with crowded tenements, tuberculosis, low wages, child labor and unemployment, as an expression of the immoral economic system under which we are trying to live.

Let us see what happens. In many of these cases a physician is summoned only when it is clearly obvious that the patient has some serious condition, often after a temporizing expedient has been employed. Working people can afford to summon a doctor only as a last resort. It is not like summoning a fire engine. Anybody may do that when his property is threatened. Society provides fire engines impartially for all; but the threatened life of a child is different. The community has not yet provided for that because the child does not represent property—that sacred object of barter and profit.

The economic sin is the worst; but next to it comes the medical sin. There are so many of these cases that

* Read before the Medical Society of the County of Kings, Feb. 16, 1915.

often the physician sees them in their early stage. What do we find has been done with such? In the great majority the physician has made a diagnosis either of rheumatism or sprain, and proceeded accordingly. Many of these cases have been diagnosed later as simple abscess, septicemia, pyemia, septic thrombosis, neuralgia, typhoid, meningitis or scurvy. In all the available histories of this common, easily recognizable and curable disease, it is most rare to find a case in which the physician has promptly made a correct diagnosis and done the one best thing possible for the patient. In a surgical experience extending over twenty-five years, I have yet to see such a case. Most commonly they come to the surgeon after the damage has been done and necrosis of bone, metastatic abscesses and infective endocarditis have developed.

Here are three illustrative cases at present under treatment, which are cited to show the physician's responsibility and how it is being met.

Case 1.—Boy, aged 13. Suddenly seized with pain just above ankle; doctor summoned and diagnosis of rheumatism made. Temperature ranged between 104 and 105 every day for weeks. The boy was under medical treatment for three months; the leg was swollen; secondary deposits rapidly appeared in the femur, opposite tibia, and bones of the hand and foot. Septic endocarditis next developed. Delirium was present much of the time for two months, as a result of the profound sepsis. Casts and albumin appeared in the urine. During the medical treatment the boy lay with the infected parts swathed in cotton and oil of wintergreen, with an ice bag on his head for the delirium, and an ice bag over the heart. He took during that period 970 grains of sodium salicylate, 885 grains of potassium iodid, 474 minims of digalen, 360 minims of tincture of digitalis, 285 grains of aspirin, 29 drams of Basham's mixture, 3,780 minims of syrup of ferrous iodid, 1¼ gallons of cod-liver oil, to say nothing of strychnin, iron, quinin, benzoic acid, spartein, sodium bromid, veronal, pilocarpin and sweet spirits of niter. Six different injections of vaccine were given. At the end of fourteen weeks of treatment for rheumatism what remained of the child was sent to us for surgical treatment. He was literally reeking with sepsis. There were discharging sinuses, abscesses and dead bone; the valves of the heart were seriously damaged; the limbs were distorted and extreme emaciation and prostration were present.

The whole of the shaft of the tibia had to be removed; the other foci of dead bone were extirpated; and the boy after a year of suffering is about to be returned to society, permanently crippled, as the result of a malady which could have been cut short by a simple opening made in the lower end of the tibia when he first came under medical observation.

Case 2.—Boy, aged 10, taken sick with pain referred to shoulder, which came on rapidly during the night. He seemed very sick and the pain in his arm severe. The next day he was taken to a physician, who made a diagnosis of neuralgia and prescribed liniment for rubbing. This treatment was persisted in for two months, during which time the upper arm at the shoulder became larger and larger. A change of doctors secured a diagnosis of rheumatism, and treatment by passive motion and electricity was carried out for six weeks. Later a needle was introduced into the swelling and pus found. The abscess was incised. This not healing, the boy was sent to the hospital for surgical treatment. The head of the humerus was found necrotic. Its removal left the boy with a stiff shoulder. Now, after nearly a year of invalidism, he is developing a secondary focus of infection in the tibia.

Case 3.—Boy, aged 12, rapidly developed pain just above the ankle; no swelling or redness; it was regarded as a sprain. The boy continued to be sick with high fever and prostration. On the third day a physician was called, who ordered alcohol applied, but the inflammation continuing, the doctor advised operation. This the parents could not afford. Another doctor was called who said that the boy could be cured without operation. A diagnosis of erysipelas was made and treatment applied accordingly. An abscess pointed and was incised. Vaccines were injected for the septicema. The boy remained very ill. Then a secondary infection developed in the upper part of the tibia. Six weeks after the onset of the disease the boy was brought to the hospital and placed under surgical care. The whole diaphysis of the tibia was found necrotic, and was removed. This boy is crippled for life.

A fourth illustrative case is herewith included.

Case 4.—Girl, aged 14, had done "sweat shop" work since she was 8 years old; fell in the dark and injured leg; two days later had pain at ankle and felt ill, but went to work. The pain became severe. She fainted in the shop and then went home. Next day had pain at wrist. High fever and delirium were present. Doctor, called on fourth day, made diagnosis of rheumatism and meningitis. Patient never came under surgical care. Died on seventh day.

This is not a discussion of chronic osteomyelitis, nor the tuberculous forms of bone disease, nor what can be done in the way of osteoplastic operations to remedy the resulting defects. The common form of acute infection only is under consideration.

These are but illustrative cases. They are not cited in a spirit of criticism. They are object lessons to all of us. They show the need of vigilance and the necessity for renouncing the old nomenclature, including such terms as "rheumatism," and seeking for the fundamental pathologic conditions underlying every symptom.

To recapitulate: Even in experienced hands the diagnosis of most surgical conditions may be difficult. Many surgical diseases recover without surgery. Some are made worse by surgery. But acute osteomyelitis is most easy of diagnosis from the very beginning. It invariably does badly unless treated surgically. Its treatment is so simple that surgery at its worst cannot do as much harm as the disease. In most surgical procedures skill is the important factor, but in acute osteomyelitis expedition is the one prerequisite for success.

384 Washington Avenue.

LEUKOCYTOSIS A DECEPTIVE SIGN IN ABDOMINAL HEMORRHAGES

LOUIS A. LEVISON, M.D.
Physician to St. Vincent's and the Lucas County Hospital
TOLEDO, OHIO

The conception of leukocytosis as an indicator of inflammatory conditions in the abdominal cavity should be altered to make an exception of abdominal hemorrhages. This diagnostic point seems to have escaped the attention of all writers with one or two exceptions. A distinction is to be made between the leukocytosis which occurs promptly after intra-abdominal hemorrhages and the posthemorrhagic leukocytosis which sets in after any severe bleeding and is generally considered as a regenerative phenomenon. Most writers on the blood and blood-forming organs maintain that the anemia resulting from hemorrhage acts as a chemical stimulation to the bone marrow and other erythropoietic apparatus.

A review of the works of authorities on the blood shows very little on this subject in a positive way. Numerous writers mention, however, that the presence of a leukocytosis in the differentiation between appendicitis and abdominal hemorrhage speaks for the for-

mer and excludes the latter. DeQuervain[1] makes the observation that an exploding extra-uterine pregnancy may cause a leukocytosis as high as 26,000, even without infection. Hoessli[2] reports three cases from the surgical clinic in Basel, and in a review of the literature up to the time of writing his paper (1914), found no other reference to this diagnostic point. This seeming lack of attention to the value in diagnosis of leukocytosis in intra-abdominal hemorrhage is the reason I wish to record the following case.

The patient, a woman, aged 39, was seen in May, 1914. She was well up to the day of illness, when she was seized with moderately severe abdominal pains, more pronounced on the right side. She was seen shortly after the onset of the pains. This first examination at 8 a. m. revealed slight rigidity of the abdominal wall, but without definitely increased rigidity on the right side.

Palpation of the abdomen was painful, with the greatest area of tenderness approximating the appendiceal region. The temperature was 99 F. and the pulse rate 90. There was slight nausea, but no vomiting. The white blood-cell count at this time was 20,000. None of the symptoms were severe and the condition of the patient did not cause any apprehension at this time. She was seen again at noon of the same day. The pains were not severe, but moderate in intensity and cramp-like. The temperature remained 99 and the pulse rate had increased to 100. The white count was now 22,000. A surgeon was called in consultation and a probable diagnosis of appendicitis made on account of the location of the pain, the abdominal tenderness, and the high leukocytosis. Ruptured extra-uterine pregnancy was discussed and excluded on account of the absence of the external appearance of hemorrhage, the lack of a very rapid pulse and the high white count. The patient had never had children, the previous menses were normal, and there was an entire absence of uterine bleeding between the regular periods. The patient was operated on the same afternoon and showed a ruptured tube with moderately severe, intra-abdominal hemorrhage. She left the operating table in excellent condition and without evidences of marked exsanguination. A white blood-cell count before operation showed a leukocytosis of 18,000. A postoperative pneumonia ensued and caused death the third day after operation.

The three cases which Hoessli reports gave white cell counts of 30,000, 15,000 and 19,000, respectively, before operation. None of these cases showed any other reason for the leukocytosis than the hemorrhage. Inflammatory processes were ruled out by very careful examination. The first question to be raised was the influence of normal pregnancies on the white blood cell count. Recent investigations by Naegeli have shown the absence of leukocytosis in pregnancy, especially in the first months which correspond to the period of extra-uterine bleedings. There are found only "high physiological values," which Naegeli refers to "increased vital processes." A distinct, neutrophilic leukocytosis is found at birth, which is explained by the tissue lesions and the hemorrhage. It is necessary also that a digestive leukocytosis as a factor in the above cases be excluded. Hoessli states that a digestive leukocytosis did not come in consideration in his cases, and in the case reported by the writer the initial count was made before breakfast.

The explanation of this posthemorrhagic leukocytosis was sought by Hoessli in an experimental way. Rabbits were chosen for experimentation with the stated reservation that the results may not be entirely applicable to humans. It was possible to secure constant normal values, after a sufficient number of preliminary counts had been made to determine the daily variations, and also the result of digestion. The average daily counts in rabbits were found to be from six to ten thousand. Variable amounts of blood were then withdrawn from the rabbits and injected into the abdominal cavity or subcutaneously. The amounts of blood withdrawn were calculated to correspond approximately by weight with a hemorrhage of from 400 to 800 gm. in human beings. The animals were not anesthetized or otherwise narcotized, as A. von Lerber[3] has shown that ether influences the blood picture and causes a leukocytosis. Sufficient care and precautions were taken in the controls, so that the results which were obtained could be ascribed in all probability to the hemorrhage. Hoessli conducted his experiments in series to determine various points.

The first series of experiments had for its purpose the determination of the effect of withdrawing blood from animals. The average, final results of this series showed that the number of the white cells decreased for the first six or eight hours. Later, there was some increase in the red cells and also of the neutrophils. The first decrease of the white cells is to be explained by the withdrawal of the blood and by the pouring of tissue juices into the vessels. The result is that of a temporary hydremia. This series of experiments corresponds to the conditions which produce the usual posthemorrhagic leukocytosis.

In the second series, Hoessli took blood from one animal and injected it immediately into the peritoneal cavity of another animal. There was a marked rise of the leukocytes in the first six hours, followed by a drop to normal by the next day. Hoessli ascribes the increase of the white cells to an irritation of the peritoneum and the peritoneal absorption of blood.

The third series of experiments more closely approximated conditions in human intra-abdominal hemorrhage. The blood was withdrawn from the animal and at once injected into the peritoneal cavity of the same animal. Here, likewise, there was a marked rise in the number of white cells during the first six hours, followed by a return to normal the next day.

In a fourth series, Hoessli withdrew blood from the carotids and injected it immediately into the abdominal wall of the same animal. He found that the white cells increased markedly in from nine to twenty-four hours and dropped back to normal by the fourth day.

These experiments will be found to harmonize very well with conditions in actual clinical experience. A sudden hemorrhage from a ruptured tube, an ovarian hemorrhage, and doubtless from other causes also, will cause in a short time a hyperleukocytosis which may reach figures higher than those to be expected in appendicitis. The leukocytosis in intra-abdominal hemorrhage will disappear in from twenty-four to forty-eight hours, but this period happens to cover the exact time in which the patient is first seen and in which there are diagnostic difficulties. In case the hemorrhage has lasted longer or is not seen until late, the white blood cell count will not present anything of value. The diagnosis at this time, however, is usually easy even from a hasty examination. When there has been a severe hemorrhage from which the patient is recovering, there will be found during the period of

1. DeQuervain: Des erreurs de diagnostic dans l'appendicite, Rev. méd. de la Suisse romande, 1913, xxxiii, No. 7 (cited by Hoessli).
2. Hoessli: Leukocytose bei Intraperitonealblutungen, Mitteilungen a. d. Grenzgeb. d. Med. u. Chir., 1914, xxvii, 630.
3. Von Lerber, A.: Ueber die Einwirkung der Aethernarkose auf Blut und Urin, Inaug. Diss., Basel, 1896.

regeneration of new blood cells, the usual and above mentioned phenomenon of posthemorrhagic leukocytosis. The behavior of the white cells after operation is influenced by the anesthesia, and any possible leukocytosis could be due to the narcosis as well as the hemorrhage. It is difficult to give the duration of the leukocytosis after intra-abdominal hemorrhage because the patients are usually operated on as soon as the diagnosis in made and the subsequent counts are influenced as above stated. The morphologic blood picture does not show any change, either in the differential formula or in the sense of Arneth. The short course of the hemorrhage before operation is hardly sufficient for such a change in the blood picture.

It follows from these observations that when the clinical signs of a certain condition in question might be either from appendicitis or other inflammatory condition on the one hand, and intra-abdominal hemorrhage on the other, the white blood cell count is not to be relied on in the differential diagnosis. If the patient shows signs favoring hemorrhage and against inflammatory conditions, such as absence or near absence of fever and a quiet pulse, a high white count would be of real value in making the diagnosis.

SUMMARY

1. A leukocytosis should not be relied on as a differential point when the clinical signs demand the differentiation of appendicitis or other inflammatory trouble in the abdomen, and an intra-abdominal hemorrhage.

2. Leukocytosis due to intra-abdominal hemorrhage is to be distinguished from the posthemorrhagic leukocytosis which follows any severe bleeding.

3. Leukocytosis from intra-abdominal hemorrhage comes on within twenty-four hours and lasts until the second day.

4. The leukocytosis is ascribed to an irritation of the blood-forming organs by the absorbed constituents of the blood. The peritoneum may be a factor in the formation of white cells.

5. The morphologic blood picture is not changed.

237 Michigan Street.

THE NORMAL DIFFERENTIAL LEUKOCYTE COUNT

A PROPOSED CLASSIFICATION OF THE WHITE BLOOD CELLS

LOUIS M. WARFIELD, A.B., M.D.
MILWAUKEE, WIS.

A cursory glance over the literature dealing with problems wherein differential blood counting is a feature, shows a lack of unanimity of nomenclature which vitiates much of the work. It is next to impossible to tell what one author means when he gives only four groups of white blood cells while it is equally impossible to place the cells when another author gives eight or nine groups. If differential counts are to be of any value in diagnosis (and I, for one, firmly believe that the value is underestimated), then there must be some uniform and simple classification which will fit a very large percentage of cases.

Some years have elapsed since Ehrlich's epoch-making discovery of the differences in leukocytes, and during those years some advances have been made. Chief among these was the introduction of the eosin-methylene blue stains in polychrome combination first proposed by Romanowsky for the staining of the malarial parasite. The use of this stain in its various modifications has done more to advance the science of hematology than any other one method.

Those who hold that the Wright or Hastings stain is better than the Ehrlich are still looked on as hopeless iconoclasts. Just why there is this apparent prejudice in some quarters against the polychrome methylene blue stain is difficult to understand. Possibly faulty technic has been responsible for poor specimens and poor results. Cabot[1] puts the facts well in the following words: "This stain (Wright's) brings out all that Ehrlich's method does and besides this stains the blood plates, the granules of the mast-cells, the chromatin of malarial parasites and the basophilic granules in abnormal red cells—all points of value. (To this might be added that it shows beautifully all the so-called transitional cells but poorly shown by Ehrlich's method.) The only weak point of the Romanowsky stains is the deceptive resemblance between certain megaloblasts, certain lymphocytes and certain myelocytes. In perhaps 1 case in 100 this troubles a beginner, in perhaps 1 in 1,000 it troubles an expert; but in no case does this difficulty affect the essentials—the diagnosis, prognosis or treatment of the case."

In a recent book on "Bedside Hematology"[2] occurs this truly astounding and grossly inaccurate statement: "The transitional leukocyte is similar to the polymorph;—in health they are usually between 2 and 5 per cent."

Even so excellent a book as Emerson's on "Clinical Diagnosis" in the last (third) edition gives much space to the elaborate classification of Ehrlich (now of historical interest only), and gives his classification as a working basis for differential counting. This has been shown by Bunting[3] and others to be inaccurate, at least for our population. In describing the cells for differential purposes Emerson[4] says, "By small mononuclear is meant any non-granular cell smaller than a polymorphonuclear neutrophil. This group would include, therefore, all lymphocytes and the small transitionals and transparents of Uskov. As large mononuclears are classified any non-granular cells larger than a polymorphonuclear neutrophil with a round or oval nucleus, any cell within the same size limits, but with an indented nucleus, is called a transitional. The polymorphonuclears, both neutrophils and eosinophils, are clear enough. As a *Mastzell* is counted any polymorphonuclear cell without granules (Ehrlich's stain), or with blue granules if methylene blue is used." Imagine a student trying to classify the non-granular cells from such an enigmatic description.

In a recent article, Staines, James and Rosenberg[5] have classified the leukocytes into polymorphonuclears, very small lymphocytes, larger lymphocytes, large mononuclears, transitionals, and have added all the mononuclears together in figuring a lymphocyte increase. This is manifestly wrong, as these cells are not all the same type nor have they all the same significance in diagnosis.

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1. Cabot, R. C.: Modern Clinical Medicine, 1906, Ed. note, p. 296.
2. Ward, G. R.: Bedside Hematology, Philadelphia, W. B. Saunders Company, 1914, p. 36.
3. Bunting, C. H.: The Normal Differential Leukocyte Count, Am. Jour. Med. Sc., 1911, cxlii, 698.
4. Emerson, C. P.: Clinical Diagnosis, Philadelphia, J. B. Lippincott Company, Ed. 3, 1914.
5. Staines, M. E.; James, T. L., and Rosenberg, C.: Lymphocyte Increase and Altitude, Arch. Int. Med., Sept. 15, 1914, p. 376.

Steiger[6] in an elaborate article divides, so it would appear, the large uninucleated cells into two groups, namely, "Grossemononukleär," and "Webergansformen." These he separates in all his counts. It is not possible to grasp what characters place the cells in these two groups. If he is using the generally accepted classification of Ehrlich, then he should have difficulty in separating some of his large mononuclears from large lymphocytes. This does not appear to be the case. Many other examples from recent literature might be given which show the necessity for a uniform classification of the leukocytes of the blood. It is unnecessary to instance in this place the articles. They are to be found nearly every week in some journal.

To correlate what is good in the various classifications and to propose a logical one is the purpose of this paper.

ORIGIN OF LEUKOCYTES

There can be no rational method of classification which is not based primarily on the origin of the leukocytes and on their further differentiation by a staining method which stains every leukocyte so that it may be readily recognized and put in its proper place in the scheme.

The leukocytes of normal blood are of two main classes, granular and non-granular, and are derived, so far as recent research shows, from several distinct sources. A granular cell does not normally become a non-granular cell, nor does a non-granular cell of the blood become a granular cell. The granular cells, namely, polymorphonuclear neutrophils, eosinophils and basophils, are derived from the parent myeloblasts, their immediate predecessors being the granular myelocytes of the bone marrow. All hematologists are agreed on this point.

NON-GRANULAR CELLS

The non-granular cells, namely, the small and large lymphocytes, "transitionals" and large mononuclears, have not the same origin, and call for separate discussion.

Lymphocytes.—These cells have their origin in lymphatic tissue. Normally the particular lymphatic tissue is undoubtedly the lymph glands. Under certain pathologic conditions collections of lymph cells (potential lymph glands) seem to take part in forming these cells. They are increased, as a rule, in all diseases involving chronic inflammation of lymphatic tissue, chronic naso-pharyngeal inflammations, glandular tuberculosis, syphilis, etc. They are relatively numerous in the blood of young children and infants except during the first few days of life.[7] They are classified usually in a percentage differential count as small and large. It is exceedingly doubtful if this be of any value. Opinion is growing that the small lymphocyte is the older form of the large lymphocyte. In every specimen of even normal blood one will find all gradations from the typical lymphocyte the size of a red cell with a small rim of protoplasm, to the cell the size of some polymorphonuclear leukocytes with eccentric nucleus and a large amount of clear, almost unstained protoplasm, which at times contains one or several metachromatic granules. These cells have, so far as we now know, the same significance in the blood picture.

The most important evidence bearing on this point is that furnished by the lymphatic leukemias, acute and chronic. Whether we believe with Ehrlich,[8] Lazarus, etc., and recently Mallory,[9] that lymphatic leukemia is a disease of the lymph glands, or with the school led by Neumann[10] to which Pappenheim,[10] Askanazy,[10] Reed,[11] Blumer[12] and others belong that it is a disease of the bone marrow, is not essential to this argument. What is vital is that in acute lymphatic leukemia when the cells must be young, immature forms, the predominant cell is one larger than a red blood cell, having a nucleus round or slightly indented, with considerable protoplasm. This protoplasm is basophilic and stains lightly with the eosinate of methylene blue stains.

On the contrary, in the chronic lymphatic leukemia the type of cell is one so much like the small lymphocyte or normal blood that it cannot be distinguished from it. This cell has a deeply staining nucleus and a small rim of fairly well stained (even deeply stained) basophilic protoplasm. The nucleus is often indented. These cells have roughened edges, a somewhat knotty appearance and occasionally so little protoplasm is present as to give to the cell the appearance of bare nucleus. This picture would seem to indicate but one conclusion: the cells in the acute form are immature; those in the chronic form are mature, even to the point of degeneration.

There seems little doubt that these cells are derived from the same source, a parent lymphoblast in lymph tissue, although they show these differences in size and in staining reaction. The explanation seems to be the one given above, namely, that they are different ages of the same cells. This is borne out by the fact that all gradations are seen both of staining reaction, of size, and of amount of protoplasm.

Simon[13] believes that the lymphocytes are derived from the large lymphocytes (lymphoblasts) of the germinal centers indirectly through a process of differentiating karyokinesis, and represent fully differentiated cells which are incapable of further development.

Reed[11] believed that there are two kinds of lymphocytes, one derived from cells in lymph tissue and one derived from a parent bone-marrow cell which on one hand might give rise to megaloblasts, on the other hand to myeloblasts. Blumer rather agreed with this in 1902. He thought that one can always separate two kinds of lymphocytes. This is not generally admitted now. The most generally accepted belief now is that the germinal centers of lymph glands produce the lymphocytes of blood. I believe that when there is rapid formation of lymphocytes, such as occurs in acute lymphatic leukemia under the stimulation of some toxin at present unknown, lymph tissue anywhere in the body may be niduses for the production of lymph cells.

So-Called Transitional Cells (Splenocytes, Monocytes, Simon).—These cells have been, and are even now, the rocks on which attempts at classification have split. They have been classed by some with "large lymphocytes," by others with "large mononuclears," by others as a separate group. In many specimens stained by Ehrlich's method they were not seen because they were so very lightly stained as often to escape recognition. They have nothing to do with any transi-

6. Steiger, O.: Klinik und Pathologie der Lymphogranulomatosis (Paltauf-Sternberg) Ztschr. f. klin. Med., 1914, lxxix, 452.
7. Warfield, L. M.: The Differential Leukocyte Count in the New Born, Am. Med., 1902, iv, 457.
8. Ehrlich and Lazarus: Anemia, Ed. 2, p. 93-95.
9. Mallory, F. B.: Pathologic Histology, Philadelphia, W. B. Saunders Company, 1914.
10. See Note 11.
11. Reed, D. M.: Am. Jour. Med. Sc., 1902, n. s., cxxxiv, 653.
12. Blumer and Gardinier: Med. News, 1903, lxxxiii, 833.
13. Simon: Clinical Diagnosis, Philadelphia, Lea & Febiger, Ed. 8.

tional stage between any varieties of leukocytes. Ehrlich[14] himself recognized his error in supposing that they were a transition between myelocytes and polymorphonuclears. Uskov[15] later complicated the classification. He gives a group of small and large transitionals. Nevertheless the name "transitional" sticks and conveys a false impression in regard to the origin of these cells.

There is still some slight difference of opinion concerning the origin of these cells. Mallory,[16] after giving the incorrect percentage of these cells, 2 to 4 per cent., instead of 6 to 8 per cent., says, "They are derived from the endothelial cells lining blood, and to a less extent lymph, vessels by proliferation and desquamation. They also multiply by mitosis after emigration from the vessel into the lesions."

Adami and McCrae[17] say that "a similar type of cell (large mononuclear) is seen in conditions of inflammation of the peritoneal cavity and here clearly some at least of these cells are of endothelial origin, derived from the lining endothelium of the serous surfaces. It is possible that the intravascular form originates from the vascular endothelium. The macrophages of the sinuses of inflamed lymph nodes are of this order."

Bunting[18] believes that they arise from the endothelium lining lymph spaces and also from the cells of the germinal centers of lymph glands. Mallory believes that the cells he sees in the germinal centers have wandered there. The two views are not so divergent as it might appear at a casual glance. Both believe the endothelium of lymph spaces may produce them.

Simon[19] is not clear in his differentiation of his large mononuclear leukocyte from a large lymphocyte and from "plasma cells." He says, "The large mononuclear leukocytes (his splenocytes, monocytes), like the small lymphocytes, probably develop indirectly from the large lymphocyte, and then age into the 'transition' forms which represent the final stage in their development. The former view, according to which the large mononuclear leukocyte develops directly from the small lymphocyte and later ages into the polynuclear neutrophil, has been abandoned. For the most part the large mononuclear leukocytes develop in the spleen (hence the term splenocytes)."

These transitional cells are motile with a slow ameboid movement. This can be seen in the fresh smear, more easily when a warm stage is employed and when there is a marked increase in the number of these cells. Every pathologist must have seen, especially in the eosin-methylene blue preparations, large mononucleated cells partly in and partly out of the capillaries, showing evidently the ameboid character of these cells.

The study of the cells in peritoneal exudation does not lead me to believe that the large cells found there, arising most probably from the endothelium, are the same cells as those which apparently arise from the endothelium of the capillaries. As a matter of fact these two kinds of endothelium present histologic differences. While both are of mesoblastic origin, one comes to be the lining membrane of the coelum, the other forms the lining of blood and lymph vessels. To the former the name mesothelium is now given, while to the later the term endothelium is limited. Cells derived from these two types of lining membrane differ. The blood cell is apparently derived only from the capillary or lymph space endothelium. In certain conditions in response to infective agents these cells occur in large numbers in lymph tissue and one is able to convince oneself of the endothelial origin of these cells. These cells are also very probably formed in large numbers in the capillaries and lymph spaces in the spleen.

It is in the lesions of typhoid fever particularly that one sees enormous numbers of these cells, many of which get into the blood stream, causing a considerable increase in the relative and actual numbers. In one case which ended fatally with hemorrhages I counted 46 per cent. of these cells and 48 per cent. of polymorphonuclear neutrophils. The lymphocytes were reduced to a very small percentage.

Bunting[18] has shown that these "transitionals" are the distinctive cells in early Hodgkin's disease. Hultgen[20] and others have shown their importance in the early diagnosis of typhoid fever. For some years I have demonstrated to students the value of the increase in these cells as a means of differentiating typhoid fever from other fevers. True, the malarial fevers also show an increase in these cells. The parasite or the malarial pigment is here the determining factor. In Hodgkin's disease the enormous increase of platelets distinguishes the blood picture sharply from that of typhoid fever.

The diagnosis of typhoid fever can be made in the very first days by careful differential count at a time when the bacilli are not yet flooding the blood stream and long before the Widal reaction is positive. This cell is an important one and should be recognized and properly classified in order to give it the value which it undoubtedly has in diagnosis.

Large Mononuclear Cells.—There is still one other non-granular cell found in normal blood when stained with polychrome methylene blue stains. It corresponds to the cell known as Türck's irritation form. The origin of this cell is not certainly established. Pappenheim[21] thinks that it is a plasma cell derived from lymph cells in response to chronic inflammation (irritation). Simon seems to confuse this cell with the so-called transitional cell. He speaks of their increase in typhoid fever. I have counted dozens of blood smears in typhoid fever without finding what I considered a plasma cell. I have never found more than 2 per cent. in a specimen other than leukemia. This cell stains so deeply both in nucleus and protoplasm that it has never been difficult to recognize it.

CLASSIFICATION

With this explanation of the origin of the cells of normal blood I propose the following classification as a working basis. This presupposes that the stain used is one of the modifications of Romanowsky's stain. Personally I confine my staining to the Wright and Hastings methods. These stains bring out every cell in the blood as well as the platelets, basophilic granula-

14. Ehrlich: Quoted by Emerson, see Note 4.
15. Uskov: Quoted by Emerson, Clinical Diagnosis, Note 4.
16. Mallory, F. B.: Pathologic Histology, Ed. 2, p. 23.
17. Adami and McCrae, Text-Book of Pathology, Philadelphia, Lea and Febiger, 1914, Ed. 2, p. 446.
18. Bunting, C. H.: The Blood Picture in Hodgkin's Disease, Bull. Johns Hopkins Hosp., 1911, xxii, 369. Bunting (personal communication) now believes that he has evidence which proves that the cells of the germinal centers of lymph glands produce these cells. He is inclined to doubt their origin from endothelium. His present view therefore is quite at variance with the views of others. In the event that he is correct, this would not alter the general scheme of classification here proposed or the value of the recognition of the "transitional" cells in clinical diagnosis.
19. Simon: Clinical Diagnosis, Ed. 8, p. 34. See Note 13.
20. Hultgen, J. F.: The Leukocytes in the Early or Pre-agglutination Diagnosis of Typhoid and Paratyphoid Fevers, Am. Jour. Med. Sc., 1911, cxlii, 253.
21. Pappenheim: Quoted by Simon, Clinical Diagnosis, Ed. 8, see Note 13.

tions, mast cells, etc. It is a classification which I have employed for several years and have found most helpful.

	Percentage
Polymorphonuclear neutrophils	50-60
Polymorphonuclear eosinophils	2-8
Polymorphonuclear basophiis	0.4-2
Lymphocytes, mature	20-30
Lymphocytes, immature	5-10
Endotheliocytes	5-9
Large mononuclears	0-2

In counting, these would be abbreviated to pmn., eos., bas., lym., mat. and immat., end., l. monos. These are six varieties, three granular and three non-granular.

It will be noted that all cells which have their origin in lymph tissue are named lymphocytes. Instead of two separate divisions of lymphocytes, small and large, it is proposed to make one group of lymphocytes, dividing them, if one cares to separate them, into mature and immature forms. The cells grade so imperceptibly into one another, however, that it is difficult to separate them. Until we know more about the significance of an increase or decrease in the mature and immature forms it would seem best to separate them as is done in the proposed classification by bracketing them. It will then be possible to make comparisons on which future data may be based.

The name "transitional" is eliminated. It seems best to drop this name altogether, for it has now no significance. The retention of a descriptive name which conveys a meaning quite at variance with that which we now recognize as belonging to the cell, has been the source of endless confusion. This cell then from its probable origin is called endotheliocyte.

The large mononuclear cell is the cell known as Türck's irritation cell. This name is descriptive without committing one to give a definite place of origin to this cell.

The criterion of any cell is not so much its size as its staining reactions. One great difficulty in former classifications of the non-granular cells has been that the size of a cell was the basis for placing it into one or another group. The size has nothing at all to do with the grouping except in a general way. In the same smear one will find areas in which the spread is thick, medium or thin and the cells will be relatively small, larger or quite large. So much depends on the evenness of the smear in differential counting that an attempt should be made to develop a good, uniform technic. However, it cannot be too strongly emphasized that not the size but rather the staining characteristics form the basis of classification.

There are then three groups of non-granular cells. Bunting,[8, 18] in recent articles, makes four groups, but admits that his small and large lymphocyte are the same cell. The former is an older form. He retains the name "transitional."

1. Lymphocytes (mature and immature). These cells vary in size from a cell about the size of a red blood cell to that of a polymorphonuclear leukocyte. When small, the nucleus is deep blue, rather evenly stained, showing in some well-tinted specimens a coarse, heavy meshwork of nuclear material with a lighter blue small amount of protoplasm around it. Larger cells show similar nuclei with a tendency to eccentric position in the cell. The protoplasm varies in amount, the color as the cell is larger, becoming fainter and fainter blue until a cell may be seen with a deeply staining nucleus and protoplasm scarcely at all stained and containing several rod-like or coarse metachromatic granules. Oftener in the older forms the nucleus is distinctly indented, somewhat kidney shaped.

2. Endotheliocyte (old name, "transitional"). This cell has no particular size or shape. It is the largest cell in the blood and usually is considerably larger than the largest polymorphonuclear neutrophil. As it is ameboid, definite pseudopods are not infrequently seen which may give to the cells somewhat bizarre shapes. The staining is absolutely characteristic. The nucleus is large, stains a rather deep blue color, and has a spongy, open-work appearance. It never appears solid like the nucleus of the first group described above. A striking characteristic of the nucleus is its polymorphism. It may be of any conceivable shape or apparently be composed of several nuclei (megacarocyte?). Nuclei have been seen S-shaped, kidney shaped, horseshoe shaped, lobed, knobbed, ring shaped or perfectly round—in short, any shape. In some cases with marked increase in this cell and increase in number of platelets, almost bare nuclei are seen. The protoplasm is abundant, stains a much lighter blue, has a definite reticulated appearance and, at times, seems to be filled with fine deeper blue granules. Close examination reveals the fact that these are not true granules but are apparently the nodes of the cell reticulum. This pseudogranular appearance is common to all cells.

These cells do not stain in a fixed picture-pattern way in all smears from all bloods. Two smears stained side by side by means of the same technic will show minor differences in the color reactions of the cells. This should not be confusing. One should not expect every blood smear to look like the illustrations in textbooks on hematology. One must glance over every stained smear in order to determine what the general tinting of the various types of cells is. With this precaution there should never be any serious doubt as to the type of cell one encounters.

3. Large mononuclears. This is a cell usually somewhat larger than a neutrophil leukocyte. The cell is almost always oval in shape. The nucleus is round or oval, almost invariably eccentrically placed in the cell. It stains a very deep blue and has a more solid appearance than the endotheliocyte but not so solid as the small lymphocyte. The protoplasm is abundant and also stains a deep blue, almost as deep as the nucleus. Granular bodies are sometimes seen but these are evidently not true granules. This cell has been called in some classifications (Simon), plasma cell, and indeed this name might be applied to it except for reasons given above.

It is realized that some criticism will be made of the view taken here of the origin of the non-granular cells. There are differences of opinion but these do not seem to be so insuperable as to nullify a simplified classification. So far as we know at present most of the cells here described have certain rather definite significances in clinical diagnosis. The increase of polymorphonuclear neutrophils and of polymorphonuclear eosinophils is of great help in diagnosis. Likewise the increase in the lymphocyte elements gives us much information. So far as any one now knows, the separation of the lymphocytes is of no real value. It is the total increase of all cells of this type which has a meaning. Possibly it may be found that in certain conditions there is a preponderance of the immature forms which has some special diagnostic meaning. By separating them, as is done above, investigators will be able to compare

their counts with those of other investigators and new facts in diagnosis may thus be discovered.

To give a name and a position to the endotheliocyte is in line with the importance of this cell in blood diagnosis. It is urged, therefore, on those working with stained smears that they adopt the proposed classification, always reserving the right to modify it or to simplify it as knowledge of the origin of the white blood cells becomes fixed and definite.

However, for the present at least, we may have a classification which is based on the best modern conceptions and which will enable us to compare results with one another, a situation which has been hitherto absolutely impossible.

141 Wisconsin Street.

RADIUM IN THE TREATMENT OF KELOIDS

FRANK E. SIMPSON, M.D.
CHICAGO

The introduction of radium furnishes us with a therapeutic agent of great value in the treatment of keloids. Unfortunately, one is not always able clinically to differentiate pure keloids from those mixed with scar tissue.

Pure keloids, especially those of recent formation and in young children can often be resolved with "selective" doses of radium rays, that is, with an amount of raying that causes little or no inflammatory reaction.

Keloids mixed with scar tissue are more resistant to radium, but even these can generally be made to disappear by using doses that cause more or less destructive action.

The exact dose necessary in individual cases is difficult to state, but after some experience with different

Fig. 1.—Keloid following burn on right great toe. From photograph taken May 27, 1914.

radium applicators is obtained, an approximate estimate of the amount of raying necessary can often be given, especially if the clinical type of keloid is clear.

Pain, which often radiates from the keloid, is usually relieved at the same time with the resolution of the tumor. This is fortunate as it is often pain, which may be of an excruciating character, that brings the patient for relief. Sometimes relief is sought for cosmetic reasons alone, and sometimes because the keloid is in an inconvenient situation.

In upwards of a dozen keloids of various types which I have treated with radium, the results have been superior to those obtained by other methods.

The apparatus and technic employed vary somewhat with the type of lesion. With keloids of considerable size, the varnish applicator is by far the best instrument to use. For linear keloids, such as may follow an operation incision, the radium tubes are very convenient, although the varnish applicators can be used by screening off the healthy tissue on each side of the keloid.

Fig. 2.—Appearance of toe shown in Figure 1, after about twelve hours' radium treatment. From photograph taken Jan. 30, 1915.

In practice the theoretic use of purely selective doses, which may cause the keloid to disappear, must often give way to the more rapid method of destructive doses. The general principle of using a sufficient dose to produce a slight but not an excessive reaction is the one I usually follow. Repeated and strong reactions are usually unnecessary and are liable to be followed by telangiectases, which detract very much from the cosmetic appearance of the tissues of repair.

In favorable cases the site of the keloid may become almost like the normal skin both in color and texture. In other cases it may be smooth and white and sometimes it may be redder than normal. In no case has there been an absolute resistance to the action of the radium.

Fig. 3.—Keloid on back situated between the spine and lower angle of right scapula. From photograph taken April 4, 1914.

A brief history of the following illustrative cases will show the method of treatment and the results obtained.

CASE 1.—(Referred by Dr. J. R. Buchbinder.) In a girl, aged 15, a keloid developed after a carbolic-acid burn near the metatarsophalangeal junction of the right great toe (Fig. 1). The keloid, which was of bluish-red color, covered an area of about 4 square centimeters and was elevated about 2 cm. above the level of the surrounding skin. It caused great inconvenience from its situation so that a thick piece of felt fenestrated to admit the keloid was worn to prevent

Fig. 4.—Appearance of keloid shown in Figure 3, after about six hours' radium treatment. Note removal of lower half of keloid. From photograph taken Sept. 30, 1914.

pressure of the shoe. A quarter-strength radium applicator screened with ½₀ mm. of lead was used. Between May 27 and June 4, 1914, this was applied for six hours in fractional doses of an hour each. This series of treatments was repeated in about six weeks. The keloid completely flattened out at the end of four weeks more after having undergone very slight inflammatory reaction. At present only a slight wrinkling of the skin marks the site (Fig. 2), complete involution having persisted.

CASE 2.—(From the Chicago Policlinic.) A large keloid on the back (Fig. 3) between the spine and the lower angle of the left scapula of a woman 45 years of age had followed a burn with a flat iron. The tumor was deep red in color and its surface was traversed by several large venules. It was about 15 cm. long and 4 cm. wide and was elevated about 2 cm. above the general level of the skin. Excruciating burning pain of paroxysmal character was complained of and this had brought the patient for relief. Between April 6 and 22, 1914, eight treatments of twenty minutes each were given to the lower half of the keloid with a quarter-strength radium apparatus unscreened. Moderate reaction followed which subsided in about four weeks. Between May 27 and July 3 certain areas that had not involuted completely were given three hours exposure in fractional doses with quarter-strength and half-strength applicators screened with ½₀ mm. of lead. This resulted in complete involution. Since the photograph was taken which shows the removal of the lower half of the keloid (Fig. 4), the remainder has been treated with a similar result. The pain radiating from the keloid was completely relieved.

59 East Madison Street.

PRIMARY CARCINOMA OF THE LIVER

OPERATION FOR RECURRENCE OVER SEVEN YEARS AFTER PRIMARY OPERATION

FRANK C. YEOMANS, A.B., M.D.
Fellow of the American College of Surgeons; Instructor in Surgery, College of Physicians and Surgeons; Surgeon to the Central and Neurological and the Workhouse Hospitals
NEW YORK

To THE JOURNAL of the American Medical Association, May 29, 1909, I contributed an article entitled: "Primary Carcinoma of the Liver with Report of a Patient Who Remained Well over Two Years after Operation." A summary of the history follows:

History.—Mrs. J. A., aged 37, was a housewife. Her parents and one sister were alive and well. The patient was married when 15. Menstruation began when 16; always regular, but painful. She had leukorrhea, dating from marriage; and menstrual pains were present until the cervix was dilated and uterus curetted seven years later. At that time a benign cyst was removed from beneath her tongue. The patient had typhoid fever when she was 24; when 32, she had double salpingitis and local peritonitis, accompanied by severe gastritis, from which she recovered with local treatment. Prior to this peritonitis she suffered from occasional "bilious" attacks, but subsequent to it they became frequent (two or three a week), consisting of nausea, vomiting of food and bile, headache and general prostration. These attacks persisted intermittently for a year; then at times she noticed distention (gaseous) and had some pain in the right hypochondrium. The pressure of her clothing was distressing and excited vomiting. During 1905-1906 she had frequent "sinking" spells while reclining. There were no chills, rarely

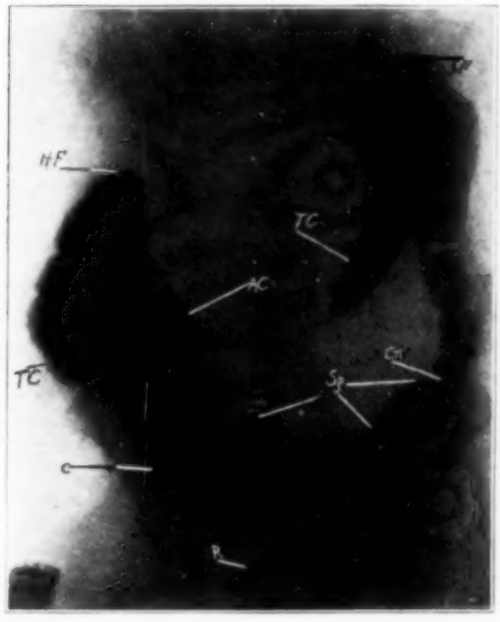


Fig. 1.—Roentgenogram showing displacement of and pressure on transverse colon by carcinoma of liver. *C*, cecum; *H*, hepatic flexure; *T*, transverse colon.

fever, and never any jaundice. The bowels were regulated with laxatives. The distention increased slowly and weakness was progressive, although combated by various methods, including antiluetic treatment.

Examination.—Abdomen: To inspection there was a marked prominence in the right hypochondrium. On palpation a firm oval tumor was felt extending from the right costal margin downward an inch below the navel and slightly beyond the

midline, moving with respiration. On percussion flatness was present over the area occupied by the tumor, but there was a zone of tympany just below the costal arch. The upper line of liver dulness was normal. A tentative diagnosis of tumor of the kidney or liver was made.

Operation.—Sept. 17, 1906, at the Polyclinic Hospital. Gas-ether anesthesia. A vertical incision was made from tip of eighth right rib to level of umbilicus. A tumor presented so large that its limit could not be defined without enlarging opening by a transverse incision from its center to the right midaxillary line. It was not evident that the tumor was in the right lobe of the liver. The fundus of the gallbladder felt normal, but the size of the tumor precluded palpation of the bile ducts. The surface of the tumor was markedly congested and traversed by a network of large veins. One spot imparted the feel of a tense cyst, confirmed by the aspirating needle withdrawing bloody fluid. The peritoneum was then protected by gauze pads and the tumor incised, about 12 ounces of bloody, odorless fluid escaping. Many trabeculae were broken down with the hand, and great quantities of soft, degenerated tissue removed with a dull spoon from the walls of the cavity, which was about the size of a large grape fruit. Rubber drainage-tubes were inserted and the cavity loosely packed with gauze. The discharge from the wound was very large in amount, dark and offensive, containing much detritus (necessitating many irrigations daily), and soon assumed the offensive permeating odor characteristic of cancer. After the tenth day the discharge slackened quite abruptly, and the patient was removed to her home on the eighteenth day; the sinus closing four weeks later.

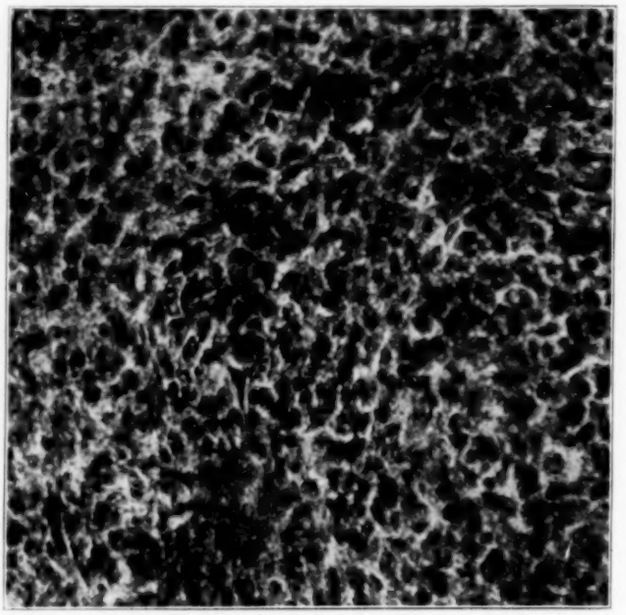


Fig. 2.—Primary carcinoma of liver. From photomicrograph.

Pathologic Examination.—Dr. F. M. Jeffries of the Polyclinic Laboratory mounted sections of the tissue from the wall of the cavity and reported Sept. 22, 1906. "The tissue from the liver of Mrs. A. received from you the 19th inst. is carcinoma. It is largely necrotic and, I should judge, of a considerable degree of malignancy."

For more than six and one-half years after this operation, namely, from September, 1906, until the spring of 1913, the patient enjoyed excellent health. Previous to the operation her weight was 110 to 120 pounds, but during the six months thereafter it rose to 150, and then remained between 140 to 150 pounds. Her complexion was ruddy and her skin fair. There was an occasional dragging pain at the site of the wound, presumably due to adhesions, and a hernia admitting three fingers, readily kept in place by ordinary corsets. By deep pressure over the wound the hand detected a hard nodular painless mass, moving with the liver in respiration.

CASES OF CARCINOMA OF LIVER, OPERATIONS AND RESULTS DURING YEARS 1909-1914*

Reported by	Sex	Age	Duration of Disease, Months	Tumor	Ante-operative Diagnosis	Operation	Result
Terrier and Auvray..... Rev. de Chir., 1898, xviii, p. 403.	♂	....	....	Non-pedunculated anterior border, right lobe, size of a fist, weight 270 gm.	.....	Intrahepatic ligature and removal with cautery.	Recovered, but three months later had recurrence, probably pelvic.
Bidewell, L. A. ..... West London Med. Jour., 1911, p. 126.	♂	61	3	Pedunculated left lobe.	Growth, anterior surface stomach.	V-shaped excision. Vessels tied. Wound sutured.	Death: Seventh day, bronchopneumonia. Necropsy: No hemorrhage, no infection, no metastases.
Hargrove, H. B. ..... New Orleans Med. Jour., Feb. 1909, p. 632.	♀	50	....	Hard tumor of right lobe. Weight 394 gm. Histology: "Carcinomatous; of scirrhus variety."	Omental tumor.	"Tumor was tied off of liver substance." No drain.	Five years, seven months. "Good health and no return."
Klose, H. ..... Beitr. z. klin. Chir., 1911, lxxiv, p. 1.	♂	45	6	Solid, smooth, fist-sized. Embedded in left lobe. Weight 1,570 gm.	Tumor of liver of lesser curvature of stomach.	Left lobe removed, tamponade of liver wound.	Death: Fourth day. Necropsy: Acute endocarditis, no metastases.
Schlimpert, H. ..... Monatsch. f. Geburtsh. u. Gynäk., 1913, xxxvii, p. 306.	♀	32	6	Goose-egg sized, cystic, left lobe. Basal-cell type carcinoma.	Tumor of stomach or liver.	Excised through sound tissue.	Healed in three weeks. Four years later slight pain and tenderness over liver scar.
Castle, O. L. ..... Surg., Gynec. and Obst., April, 1914, p. 477.	♂	10½ Months	5½	Pedunculated, margin of right lobe. Weight 651 gm. Microscopic, parenchymatous adenocarcinoma.	Sarcoma of kidney.	V-clamping of pedicle. Interrupted catgut coapted base of pedicle over gauze, which acted as drain. No evidence of metastases.	Died: Sixteenth day, acute gastro-enteritis. No necropsy. First case reported in which complete surgical excision was done in an infant.
Yeomans, F. C. ..... THE JOURNAL A. M. A., May 29, 1909, liii, p. 1741.	♀	37	12+	Pedunculated, right lobe. Size grape fruit.	Probable tumor of liver.	Incised cavity, curetted and packed.	Operated for recurrence seven years after primary operation. Died, embolism? Necropsy denied.

* In this table the sign ♂ stands for male, ♀ for female sex.

This remained the same size and doubtless was the cicatrix in the liver.

Later History.—Oct. 9, 1913, she reported as having had "attacks of exhaustion" during the past six months. Six weeks before (August 25), she fell down stairs, striking her right shin and side. Four weeks later there developed a severe continuous pain, dragging and throbbing in character, in the right loin, which required opiates for its relief. This pain disappeared in about six weeks.

Examination now showed, for the first time, a hard, tender, oval tumor about 2 by 4 inches on the site of the old scar tissue that was always palpable by deep pressure beneath the wound of the operation. This mass moved with the liver in respiration. Her weight was now 126½ pounds; hemoglobin, 90 per cent.; urine, negative for albumin, sugar and microscopic elements.

A roentgenogram (Fig. 1) on Nov. 14, 1913, by Dr. Quimby, after an enema of bismuth, showed "cecum and ascending colon dilated. The first portion of the transverse colon passes downward and to the right to the outer side of the ascending colon and then turns inward and crosses the abdomen. The pressure of some structure external to it squeezed the greater portion of its contents out of that part extending from the ascending colon to the left of the median line. There is a large soft structure within the abdomen which projected to the right of the ascending colon. The part visible was about 12 cm. in diameter. Radiographic diagnosis: A tumor-like mass lying principally in the right half of the abdomen, extending from below the iliac crest upwards to about the level of the first lumbar vertebra. It displaces and presses upon the right transverse colon."

Second Operation.—Dec. 3, 1913, at Polyclinic Hospital, under ether anesthesia, a 6-inch vertical incision in the line of the old scar disclosed a tumor the size of a grape fruit. This was enucleated from its fibrous capsule by blunt dissection with slight difficulty, except its posterior attachment to the old scar tissue, which had to be cut. Bleeding was moderate, and easily controlled. A rubber tube was inserted, gauze packed about it, and the wound closed on each side of the tube. Time of operation, seventy minutes.

Patient was returned to her room in excellent condition, but one hour later developed sudden dyspnea, gave a few frantic gasps and died, probably from embolism, though this could not be proved as no necropsy was permitted.[1]

Dr. Jeffries' report was the following:

Macroscopic: A mass of seminecrotic structure, 5 inches long by 2 inches thick. Cut section (Fig. 2) revealed indefinite structure studded with numerous small abscesses. A histologic study of tumor mass reveals a growth of unusual character. In many areas it would appear to be a mixed cell sarcoma, but there are other areas consisting of a fibrous stroma forming alveoli filled with epithelial like cells not associated with blood vessels. The latter structure leads us to make the diagnosis carcinoma and we conclude that the tissue which appears to be sarcomatous is in reality inflammatory only, or that we are dealing with a fibrous mass that has undergone inflammatory changes. A considerable degree of necrosis prevents an accurate survey of the histologic structures, but the presence of bile pigment would suggest its origin from the liver.

In looking up the literature five years ago I found nine cases of primary carcinoma of the liver reported, in which there had been operation. Of these one patient died three days after operation, four had recurrences in two, five and seven months, and eight years, respectively, three were alive and well three, three and one-half, and seven years, respectively, and one was reported well, the period of time after operation not being stated.

The results of these cases and the seven others since reported up to 1914, making with my own case sixteen in all, shows: Death in 4 patients, from various causes, within sixteen days after operation; recurrence in 6 patients, from two months to eight years after operation; alive and well, 6 patients, from three to seven years after operation.

As pointed out by Eggel[2] from a pathologic study of 163 necropsies, primary carcinoma of the liver occurs in three forms: (*a*) Massive, which most frequently involves the right lobe; (*b*) infiltrating, of very rare occurrence, and (*c*) nodular, usually one primary growth with several smaller nodules, the usual primary type.

The prognosis is hopeless in all except single and primary growths. Even in the latter the diagnosis is usually wrong. The tumor before operation has been mistaken for hepatic abscess, hydatid or other cyst of the liver; tumor of stomach, colon, mesentery, pancreas or kidney; gall-stones, aneurysm of aorta, fibroid of uterus or ovarian cyst. The only hope for improvement in results lies in the direction of earlier operative exploration in patients with tumors in the right upper quadrant in whom no primary growth can be found elsewhere in the abdomen.

230 West Fifty-Ninth Street.

1. This case was reported and specimen shown before the Surgical Section of the New York Academy of Medicine, Jan. 6, 1914.

CHRONIC ENTERIC INTUSSUSCEPTION DUE TO INTESTINAL TUMORS

GILMAN J. WINTHROP, M.D.
MOBILE, ALA.

The rather uncommon occurrence of intestinal invagination caused by tumors, and the interesting pathology of one of the cases, suggest the recording of these two histories.

Intussusception, subsequent to intestinal growths, is caused, as Treves suggests, by the excitation of an intense peristalsis at the point of attachment of the tumor and not by the tumor preceding and, as it were, drawing on the intussusceptum. The tumor usually forms the apex of the intussusceptum, as in the instances here reported. The lateral implantation of these growths, and the fact that all the invaginations were of the ascending variety, would lead to the view that the portion of intestine bearing the tumor prolapsed inward toward the intestinal lumen, excited energetic peristalsis and was then "swallowed" by peristaltic waves from above. The invagination increased by more and more of the sheath passing into the intussusceptum. This would accord with Hochenegg's view that carcinoma can produce invagination only when polyplike, that is, when the tumor distinctly protrudes and acts as an intralumenary body. The same mechanism obtains in invagination due to Meckel's diverticulum.

Weller Van Hook and Allen B. Kanavel[1] cite the following cases of intussusception caused by tumors.

Weiss in his study of the literature refers to sixteen instances. Two instances were papillomata of the rectum with subsequent intussusception of the colon. Wagner was able to palpate a pedunculated fibroma in the case of an intussusceptio ileaca at the apex of the intussusception. Poltauf demonstrated a case of polyposis of the stomach and intestines with consecutive intussusceptio ileocaecalis. Treves reported a case in which three polypi caused three separate invaginations. Marchand described a subserous lipoma of the cecum that formed the starting point of an invaginatio

2. Eggel, Hugo: Beitr. z. path. Anat. u. z. allg. Path. (Ziegler's) 1901, xxx, p. 506.

1. Van Hook, Weller, and Kanavel, Allen B.: Keen's Surgery, iv, 660.

ileocaecalis. Deichert describes a case of lymphocarcinoma of the digestive tract with multiple intussusceptions, while Luboff mentions a solitary lymphocarcinoma located at the point of the intussusceptum. A melanotic carcinomatous metastasis was described by Marchand as the cause of an intussusceptio jejunalis, the recurrence having taken place in the intestinal mucosa.

Moynihan[2] notes a case, cited by Morrison, in which an intussusception of the ascending colon was produced by a "rounded polypus of the size of a large walnut, which sprang from the antimesenteric border."

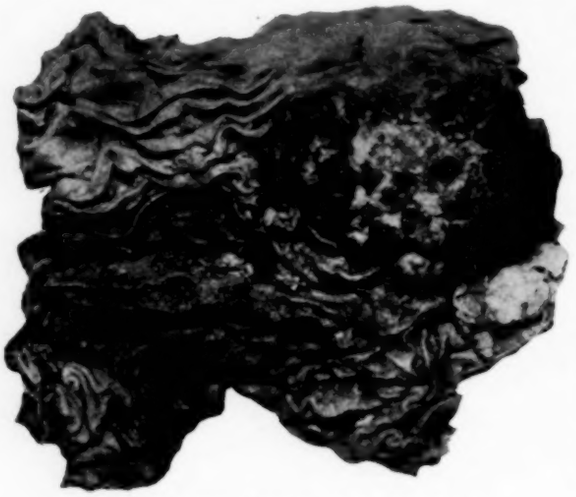


Fig. 1.—Papillary adenoma of the intestine.

CASE REPORTS

CASE 1.—*Intussusceptio ileaca, due to adenopapilloma of intestinal wall.*—Man, aged 26, with unimportant family and past history, was suddenly seized in November, 1910, with severe cramping pains in the left lower abdominal quadrant. The pain was strictly localized; there were repeated attacks of vomiting, never fecal in character; there was no fever. The attack lasted several hours and then suddenly subsided.

During the next two months he had several such attacks, each sudden in onset and as suddenly subsiding. In 1912 the condition recurred and he had severe attacks, with nausea and vomiting, every few days for a period of seven months. Since 1912 he has felt perfectly well, except for obstinate constipation, until early in June, 1914, when the cramps again returned. For the past ten days the cramps have been most severe. Starting in the left iliac region they travel toward the right iliac fossa and then upward toward the liver. He feels a "hard lump" in the locality of the pain; is nauseated and vomits. Ingestion of food seems to initiate an attack and after vomiting he is often relieved. The attacks cease rather suddenly, and he notes a disappearance of "the lump" in the abdomen at the same time. The vomitus is usually recently ingested food, and has never been distinctly fecal. Constipation has become severe and now approaches obstipation.

Examination.—The patient was a well-nourished negro man. The heart and lungs were normal. The Wassermann test was negative. There was no occult or free blood in the stools. In the left hypochondriac and lumbar regions and especially in the iliac region, one noted well-marked peristaltic waves. These were slow and downward in character. On palpation a rounded, firm and slightly tender mass was felt. The mass, variable in size at different times, was freely movable and was absent entirely between the attacks of pain, but invariably returned in the left lower quadrant, with onset of the pain, and growing larger, extended from the left lower quadrant upward toward the splenic area. Assuming its greatest size, the mass was about 6 inches long and from 3 to 4 inches in thickness. Rectal examination, digital and proctoscopic, was negative.

Fig. 2.—Polyposis of the intestine.

Operation.—A left rectus incision revealed in the left iliac fossa a tumor mass which, being delivered from the abdomen, proved to be an ileac intussusception 6 inches in length, located at about 8 feet from the cecal end of the intestine. The invagination was easily reduced, and at its apex was felt a hard tumor mass within the intestine, and the mesenteric glands corresponding thereto were enlarged. Six inches of the intestine, containing the tumor, were resected, and a lateral anastomosis performed. The patient made a rapid recovery, leaving the hospital on the tenth day, and to date has had no further trouble.

Pathologic Report.—The tumor is a "papillary adenoma with no invasion of the wall of the gut beneath the new growth" (Fig. 1).

CASE 2.—*Intussusceptio ileaca and jejunalis due to papillary adenoma of intestinal wall. Multiple.*—Man, aged 20, with negative family history and unimportant past history except for a mild attack of grip in 1913, had been apparently well and at work until three months ago, when he began to have "indigestion"-cramps, full feeling and swelling in the abdomen. These symptoms gradually became less severe and frequent, and now the attacks occurred several times a day. A typical attack started with a severe cramp low in the left side of the abdomen, and he could feel a mass in the same area. The mass and pain slowly extended upward and toward the umbilicus and persisted for a few minutes or for several hours. When the mass disappeared the pain subsided and he was comfortable until the next attack. Constipation seemed to increase the frequency and severity of the attacks. Ingestion of food had no effect on the attacks. The patient had lately lost considerable weight.

Examination.—The patient was a thin negro man. The head and chest were negative. There was no adenopathy. Between attacks the abdomen seemed normal. There were no tenderness and no masses to be felt, but with onset of the pain there was muscle spasm, and a mass was felt in the lower left abdominal quadrant. Rectal examination was negative. Blood and Wassermann were negative.

Operation.—A left rectus incision revealed in the upper third of the ileum an intussusception of about 4 inches of the intestine. When the invagination was reduced, its apex was found to correspond to a scarlike stricture involving about half the circumference of the intestine and produced by a papillomatous tumor of the intestinal lumen. Three inches of the intestine, containing the tumor, were reseceted and a lateral anastomosis performed. About 3 feet proximal to the first a second invagination was found. This involved about 6 inches of the upper ileum. The entire area was excised and the intestine reunited by end-to-end suture. The pathologic condition of this was similar to the first intussusception, except that the apex contained two papillomas.

The largest invagination was found about 2 feet below the jejunoduodenal junction. It involved 3 feet of the intestine, and being reduced with difficulty, its apex was formed of a section of intestine 16 inches long containing six papillomas (Fig. 2). This section—16 inches—was resected and reunited

2. Moynihan: Abdominal Operations, p. 123.

end to end with a Murphy button. A fourth invagination was located still higher in the jejunum, but was easily reduced, and as the patient was suffering somewhat from shock, no resection was attempted.

The abdominal wound healed perfectly and the patient was walking about in apparently excellent condition in fourteen days. On the fifteenth day he suddenly developed signs of pulmonary embolism and died in two hours.

Necropsy.—There was a small, well-walled-off abscess at the root of the mesentery of the upper end of the jejunum caused by leakage from the end-to-end (suture) anastomosis. The stomach presented no gross lesions. The upper portion of the duodenum was the site of a compound partly pedunculated new growth, each unit of which was mushroom shaped, rather firm, yellowish white, the surfaces of some ulcerating. These tumors occurred single or grouped in twos and threes, all through the duodenum, extended into the jejunum and at varying distances through the small intestine to the ileocecal valve. The lymphoid tissue in solitary and agminate areas was hyperplastic; the lymph nodes of the mesentery were moderately enlarged. At the junction of the duodenum and jejunum there was an intussusception, the lower portion entering the upper for a distance of about 5 cm., and at the apex was one of the tumor masses; just below was the line of suture at which another invagination was relieved and where the leakage occurred; at two other points in the small intestine were the traces of operative intervention, one by a Murphy button, which was free in the lumen, the other by lateral anastomosis. Death occurred from pulmonary embolism, intussusceptions and an abdominal abscess.

Pathologic Report.—There were multiple adenoma and adenocarcinoma of the small intestine, with metastases to mesenteric glands.

AN ADAPTATION OF FRANK'S SEGMENT CAPSULES FOR CLINICAL USE

CARL J. WIGGERS, M.D.
Assistant Professor of Physiology, Cornell University Medical College
NEW YORK

It is generally recognized by clinicians and physicists alike that the graphic apparatus in current use for recording the form of the pulse beat introduces considerable inaccuracy. It is therefore of general importance to recognize that we possess in the segment capsules of Frank a form of recording apparatus

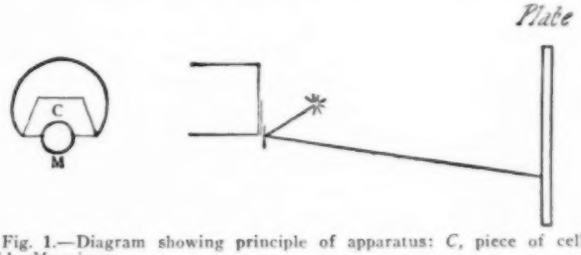


Fig. 1.—Diagram showing principle of apparatus: *C*, piece of celluloid; *M*, mirror.

that may be trusted to reproduce faithfully the pressure and volume changes actually existing in the veins and arteries and, in addition, one which is adapted to record directly the apex beat and heart sounds.

The use of this valuable apparatus has received little encouragement from clinicians and physicians, partly because the details of its operation are not sufficiently understood, and, partly, because it has not been available for bedside work. It seems desirable therefore to describe briefly, yet accurately, the principle and operation of these capsules and an arrangement which makes their use at the bedside practical in hospital wards. This practicability has been demonstrated by their use at intervals during the past two years in the wards of Bellevue Hospital.

ADVANTAGES AND CONSTRUCTION OF THE SEGMENT CAPSULES

It was apparent to Frank that the recording Marey tambour which is the model after which all polygraphs are constructed, is the chief cause of inaccurate tracings. This is due, in a large measure, to the great mass, magnification and friction of ponderable levers.

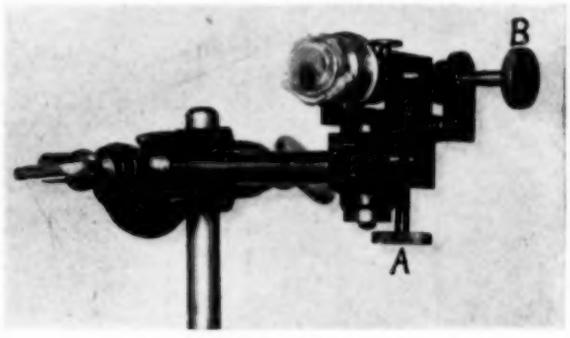


Fig. 2.—Mounting of capsules.

The segment capsule was therefore devised to furnish a recording mechanism in which the lever is without weight, is not impeded or modified by friction and yet permits a greater magnification of the membrane movement without deleterious effect on the system.

This ideal set of conditions was attained by flattening one side of the recording tambour so that a segment of the circle is cut off; hence the term "segment capsule" (Fig. 1). Over this capsule is stretched, under slight tension, the thinnest rubber dam obtainable. On the rubber is cemented a small trapezoidal piece of thin celluloid (*C*) so that its broad side exactly pivots on the chord side of the circle. On this, in turn, is cemented a tiny mirror (4 mm. in diameter and 0.2 mm. in thickness) so that its diameter also exactly pivots on the chord side (*M*). If this is carefully accomplished, movement in one plane only is possible.

On this mirror is focused a band of light, the image of which is reflected at a distance of 1 meter on a moving bromid film (Fig. 1). It is readily comprehended that this beam of light constitutes a lever without weight or friction.

In order to obtain lateral and vertical movements of the reflected band, a convenience necessary to throw light exactly into the camera slot, the capsules are mounted, as shown in Figure 2, in miniature cannon carriages allowing an upward movement by screw *A* and a lateral movement by screw *B*.

The apparatus is adapted for hospital use by the arrangement shown in Figure 3. Three segment capsules, *A*, *B*, *C*, are mounted by their cannon cartridges on an upright rod. Each one is connected with a receiving cup suitable for the pulsation to be studied. Three bands of light are provided from a single source of illumination after the clever method suggested by Seemann and Frank. The band of light from a Nernst filament is projected by three lenses, *D*, *E*, *F*. The alignment is such that the angle between the band projected on and reflected from the capsule mirrors is as

acute as possible. Immediately in front of the Nernst filament the pendulum of a clock (*H*) swings at the rate of four times per second, giving a simultaneous time record on each tracing.

The movements of the reflected beams are photographed on a moving film in a photokymograph (*P*). I use a modified and improved form of the Edelmann apparatus. It has recently been described in detail.[1] It is actuated by a small motor shown in Figure 3 at the end of the table. The apparatus in common with Frank's photokymograph, can be used in an undarkened room, the slot being so protected that only the rays from the Nernst light affect the films. The entire

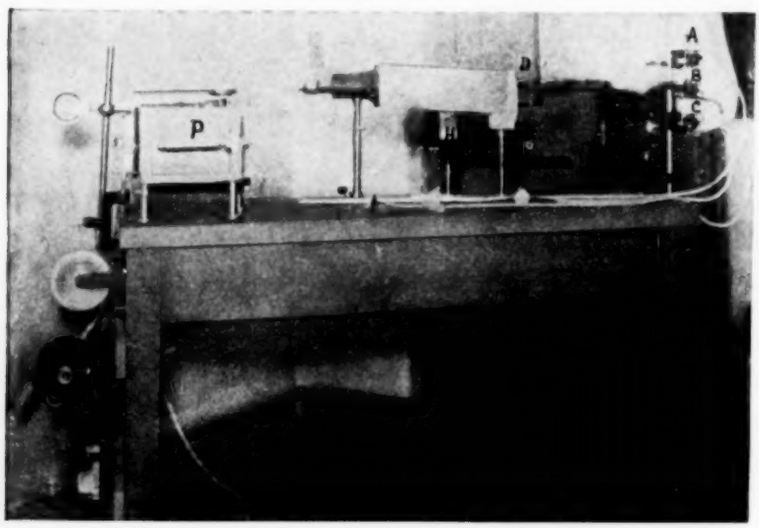


Fig. 3.—Adaptation of apparatus for hospital use.

apparatus can therefore be wheeled about the ward and records obtained without a transfer of patients from their beds. When not in actual use the apparatus is covered by a large hood, as a protection against meddling in the wards.

NATURE OF THE IDIOSYNCRASY TO EGG-PROTEIN IN HUMAN BEINGS*

PRELIMINARY NOTE

JACOB BRONFENBRENNER, Ph.D.
V. L. ANDREWS, M.D., and Z. R. SCOTT, M.D.
PITTSBURGH

In previous communications we have shown that the combination between the immune serum and its specific antigen in vitro is followed by the autodigestion of the serum.[1] Thus the assumption of Abderhalden that in the Abderhalden test placenta is digested is not correct and the dialyzable substances appearing during the reaction originate from the serum and not from placenta. It was shown also that the properties of the products of such autodigestion of the serum are toxic for homologous animals and in all respects resemble anaphylatoxin.[2] We have also shown that autodigestion of serum occurring in vivo as a result of specific interaction between the antibody of the serum of the sensitized animal and the antigen is the cause of experimental anaphylaxis.[3]

Moreover, our experiments have suggested that the phenomena of asthma, eclampsia, epilepsy and of a number of different idiosyncrasies which symptomatically very closely resemble anaphylaxis may be actually identical with this phenomenon.[4]

Through the courtesy of Dr. Edwin Zugsmith of this hospital and through the intelligent collaboration of the patient and her parents we had the opportunity in the last few months to make an extensive study on a case of a young girl, 17 years of age, who is subject to asthmatic attacks and severe gastro-intestinal disturbances following the ingestion of small quantities of egg-protein. This peculiarity has been noticed in the patient since very early childhood and accordingly all the food containing egg in any form was carefully eliminated from her diet by Dr. Zugsmith.

Last December, owing to the ingestion of a very small amount of egg in the form of pastry, the patient went through an attack and shortly after was the subject of our study. In order to see, as we suspected, whether the attack was of anaphylactic nature we tried by means of the Abderhalden test to discover any specific antibody in her blood. Freshly drawn serum of the patient was subjected to the Abderhalden test with coagulated egg-white as substratum. The result of this examination has shown beyond any doubt that her blood contained specific antibody against the egg-protein.

As further examinations would require large amounts of blood, we preferred in the later examinations to modify this technic by injecting a small amount of the patient's serum in guinea pigs, thus passively sensitizing them against egg-protein, and subsequently repeated the Abderhalden test, using the serum of these guinea pigs. These tests have confirmed our previous findings of the specific antibody against the egg-protein. The passive transmission of the antibody to the guinea pigs has given us also the opportunity to make other tests with this serum. Thus, by combining in vitro the serum of passively sensitized guinea pigs with the boiled egg-white, we have obtained anaphylatoxin which, in doses of 0.5 c.c., killed guinea pigs of 250 gm.

We have been able also to demonstrate the phenomena of the diminution of the antitrypsin in the serum during the Abderhalden reaction similar to that which we had found previously in the test for pregnancy.[5]

In this case the changes in the antitryptic index were of especial importance, since in at least two out of a number of guinea pigs tested when the serum alone contained ninhydrin-reacting substances,

1. Wiggers, Carl J.: Studies on the Pathological Physiology of the Heart, Arch. Int. Med., Jan. 15, 1915, p. 77.

* From the Pathological and Research Laboratories of the Western Pennsylvania Hospital.

* Just as this communication was being completed, our attention was called to the article by Dr. A. A. Eggstein, appearing in The Journal A. M. A., Feb. 27, 1915. Although we do not agree with all the conclusions drawn by this author, we are glad to notice that most of his results are confirming our findings of the last year.

1. Bronfenbrenner, Jacob: Proc Soc. Exper. Biol. and Med., October, 1914, p. 7.

2. Bronfenbrenner, Jacob: Proc. Soc. Exper. Biol. and Med., November, 1914, p. 48.

3. Bronfenbrenner, Jacob: Jour. Exper. Med., to be published.

4. Bronfenbrenner, Jacob: Pennsylvania Med. Jour., October, 1914, p. 20.

5. Bronfenbrenner, Jacob: Mitchell, Jr., and Titus: Biochem. Bull., January, 1915.

the Abderhalden test gave conflicting results, whereas the determination of the antitryptic index by the standard method was not influenced by the presence of these ninhydrin-reacting substances in the serum and showed a consistent diminution of antitrypsin during the experiment entirely comparable to the antitryptic index obtained in other examinations. It seems, therefore, that the diminution of antitryptic index may not only be useful as an additional indicator in the Abderhalden reaction, but in some cases it may give even more reliable results.

In concluding these notes we wish again to call attention to the fact mentioned previously, that inasmuch as the phenomena clinically resembling anaphylaxis are due to the toxic effects of the products of autodigestion of the patient's serum, the control of this autodigestion may give a clue to the treatment of the condition.[6] We have already a number of facts in our possession which point to the possibility of preventing anaphylaxis by means of stopping the autodigestion through the injection of antitrypsin or by allowing the digestion to go beyond the point at which its products are toxic. In fact, successful use of normal serum in the treatment of eclampsia, according to our experiments, can be explained by the fact that in introducing excess of normal serum one increases markedly the amount of antitrypsin in the body, thus stopping autodigestion in vivo as we have done it in vitro.[6]

SUBDIAPHRAGMATIC INFLAMMATION

WITH A SYNDROME OF PHYSICAL SIGNS AND SPONTANEOUS RECOVERY WITHOUT SUPPURATION *

ROGER I. LEE, M.D.

Visiting Physician to the Massachusetts General Hospital: Professor of Hygiene, Harvard University

BOSTON

Localized suppurative processes just beneath the diaphragm, while perhaps uncommon, are not rare. Picqué in an admirable monograph, in 1910, reviews the subject of subdiaphragmatic abscess. He particularly emphasizes a point originally elaborated by Leyden, which has not received sufficient attention, namely, that subdiaphragmatic abscess is actually within the thorax and suggests the term subdiaphragmatic pyothorax. Picqué shows clearly that in subdiaphragmatic abscess the signs and often the symptoms are those of pyothorax taken in its usual sense, meaning above the diaphragm. From an anatomic and physiologic point of view, it is clear that there may well be little difference in physical signs between a localized collection of pus above the diaphragm pushing the diaphragm down, and a similar collection of pus immediately below the diaphragm, pushing the diaphragm up.

Picqué gives the prognosis of inflammatory processes below the diaphragm as absolutely bad without surgical interference. This would seem to be true of the frank suppurative inflammatory process which is the usual condition. On the other hand, one occasionally sees at the post-mortem table extensive adhesions over the liver without evident cause.

Recently I have had the opportunity of observing four cases which all gave a similar syndrome of physical signs and a similar roentgenogram. All four were considered at first to be suppurative processes. All, however, recovered spontaneously. These cases indicate that there are inflammatory processes of infectious origin situated below the diaphragm which do not necessarily go on to suppuration. At any rate they recover spontaneously. The signs might well be interpreted as having their origin above the diaphragm, and it is to the Roentgen ray that we owe the ability definitely to decide that the process is below the diaphragm. While, of course, the statement of Picqué that subdiaphragmatic inflammation is a direct indication for surgical procedure holds true in a large proportion of cases, yet apparently there is a group of cases of subdiaphragmatic inflammation not hitherto recognized that recover spontaneously. This group of cases seems to form a clinical entity. The last two cases of this series were recognized clinically. The diagnosis was made by the clinical signs. It is probable that on account of the difficulty of differentiating processes above the diaphragm from those below the diaphragm without the use of the Roentgen ray, this group is larger than at first appears. The roentgenogram is that of subdiaphragmatic abscess.

The differentiation of this particular group of cases from the usual type of subdiaphragmatic abscess must be made on clinical evidence.

The following cases were observed during two services of six months on the west medical service of the Massachusetts General Hospital and represent the clinical material from about fifty beds.

CASE 1.—E. A. (W. M., 190725), a housewife, aged 40, entered the hospital Aug. 16, 1913. Family history and past history were negative.

Present Illness.—Three days before entrance the patient had fever and nausea of sudden onset, some slight pain in right lower chest, and a day or two later developed a very slight cough. She was referred to the hospital with the diagnosis of lobar pneumonia.

The routine physical examination was negative except for the chest. The lungs showed scattered râles. At the right base behind, below the angle of the scapula, there was dulness, distant bronchial breathing and increased fremitus. No Grocco's sign. Temperature 101, pulse 120, respirations 35. Urine examination negative. White count at entrance 15,000. The smear showed a polynuclear leukocytosis. Examination of the sputum, which was scanty, showed only a few organisms. Temperature remained about 100, she had rather more cough. The white count rose slowly to 43,000.

One week after entrance, examination showed dulness beginning at the angle of the scapula, changing to flatness at the right base. The line of dulness followed the "S" shaped curve of Ellis. The dulness at the base showed two characteristics that have been constant in the series: 1. Dulness by light percussion was high, reaching to the angle of the scapula, but the dulness by heavy percussion began 2 inches lower. The examination of the chest in other conditions showed no such discrepancy. 2. On deep breathing there was well-marked descent of the border of dulness. Both of these phenomena are, of course, only indicative of a high diaphragm. There was a definite Grocco's sign on the left. On auscultation, friction sounds were heard at the right base with diminished breathing, which in places showed a prolonged, high-pitched and rather intense expiration. Tactile and vocal fremitus were diminished. Both the dulness and the flatness descended with respiration.

At this time the patient was roentgenographed. Dr. Holmes reported from observation of plates and fluoroscopic examination that the lungs were normal and the diaphragm

6. Bronfenbrenner, Jacob: Jour. Exper. Med., 1915, xxi, No. 3.

* From the West Medical Service of the Massachusetts General Hospital.

1. Picqué, R.: Rev. de chir., 1910, xlii, 183 and 577.

unusually high on the right. The interpretation was of some pathologic process below the diaphragm, probably abscess. Exploratory puncture of the chest showed a few cubic centimeters of cloudy fluid. Examination of this fluid showed albumin 3.5 per cent., smear of the sediment showed neutrophils 65 per cent., basophils 35 per cent., no organisms, culture on blood serum showed no growth.

A tentative diagnosis of subdiaphragmatic abscess was made. In view of the high leukocyte count and the physical signs the patient was transferred to the surgical service for operation. Dr. Whittemore did a preliminary resection of the rib and placed packing against the pleura on August 25, expecting after the interval of a few days to perform the secondary operation. The temperature, pulse, respiration and leukocytosis came to normal within the next few days and the patient was without symptoms. At the time of the removal of the packing, Dr. Whittemore inserted a needle through the diaphragm and withdrew a few cubic centimeters of bloody fluid. Culture on blood serum showed numerous colonies of colon bacilli. The patient made an uneventful recovery and was discharged well, Sept. 7, 1913. The roentgenogram at discharge was of course complicated by the operation but showed that the diaphragm had returned to essentially its normal position.

It is of particular interest in this case that all the symptoms pointed to a pulmonary lesion. Furthermore, a small amount of fluid was obtained from the pleural cavity. While it cannot be stated positively that the fluid obtained was above the diaphragm, yet every precaution was taken not to go through the diaphragm.

Picqué and others refer to the presence above the diaphragm of a sterile fluid, the result of irritation on account of a process below the diaphragm. The presence of the colon bacillus in fluid obtained by puncture through the diaphragm after operation may or may not be of significance. It seemed evident that the progress of the case was uninfluenced by operation. Neither the history nor the physical findings gave any clue to the origin of this infection.

Case 2.—W. H. (W. S. 190588), a woolen weaver aged 50, entered the west service under the charge of Dr. H. Williams, Aug. 9, 1913. Family history and past history, negative.

For two years the patient had had a left inguinal hernia which had become incarcerated in the scrotum. Dr. Williams operated on him on August 10, and did a usual radical operation for hernia. Before operation his physical examination, including blood and urine, was entirely negative. His convalescence was uneventful, the wound was solid and clean.

On August 28, eighteen days after the operation he had diarrhea. The temperature rose to 103, with an irregular range, slowly coming to normal after eight days. There was little change in his pulse or respiration. He had no pain and no cough. The diarrhea ceased after two days. He had a leukocyte count of 22,000 on August 29. He was seen in consultation on August 29, and daily thereafter.

Examination showed dulness, increasing to flatness, beginning at the right scapula with no abnormal dulness in the front of chest. The dulness and flatness both descended with inspiration and showed the discrepancy noted in the previous case between light and heavy percussion. A definite Grocco's sign was present on the left. After roentgenography and fluoroscopic examination Dr. Holmes reported negative lungs, a very high diaphragm on the right. The interpretation was of some pathologic process beneath the diaphragm which moved with respiration. The signs slowly cleared up, the temperature and white count came to normal. He had at no time any symptoms, except those of malaise. There was never any pain and no cough. He was discharged well Sept. 4, 1913. His physical examination at that time was negative and the roentgenogram showed a diaphragm in the normal situation.

Obviously the most interesting feature of this case was the operation eighteen days before the onset of the acute infection. I cannot satisfactorily associate the two although it seems likely that there is some association. In this case there was complete absence of symptoms except the two-day diarrhea and the usual symptoms of fever.

Case 3.—T. M. (W. M. 190652), an Italian peddler aged 48, who had lived in Massachusetts for twenty-seven years, entered the hospital Aug. 13, 1913. He was referred to the hospital with a diagnosis of "fluid in the chest." Family history good.

Twenty-five years ago the patient had a fever which lasted for about three weeks. When closely questioned he was under the impression that his chest was tapped at that time but he does not know which side and his statements were very vague.

Present Illness.—On July 6, a little over five weeks before entrance, he first began to have pain all over right chest. July 8, he went to bed on account of this pain and fever. He remained in bed until August 6, after which he did not feel feverish and his only complaint was dull pain in the right chest. There was no cough, no vomiting.

Physical examination was negative except for the chest. The heart was negative. Right clavicle more prominent than left; the right chest moves little with respiration. There was slight dulness all over the right chest. There was a semicircular area of flatness about 8 cm. in diameter arching up from the lower border of the right lung in the posterior axillary line. This area of flatness descended with inspiration. The dulness varied with the force of percussion. Over this area we found the breathing vary from normal to very feeble, with absent vocal and tactile fremitus. A "moist-leather" sound was heard over the right lower chest. Abdomen negative. Temperature 98, pulse 80, respiration 25. Wassermann negative, urine negative, whites 7,000; smear negative. From roentgenogram and fluoroscopic examination Dr. Holmes reported a very high and rather rigid diaphragm on the right, descending somewhat with inspiration, corresponding approximately to the physical signs. Lungs negative. Interpretation, some pathologic process below the diaphragm. He was kept under observation for twelve days. He had no elevation of temperature, leukocytosis or other symptoms. The moist-leather sound disappeared from the chest, the examination otherwise was the same and the roentgenogram ten days later showed no change. He was discharged well.

The supposition in this case is that the diaphragm had been fixed in its abnormal position. It is possible, of course, that this condition had persisted since his attack of fever twenty-five years before. The case is included as being somewhat similar to the other cases and suggestive of the same process.

Case 4.—J. V. (W. M. 197861), a laborer, aged 45, born in Italy, living in Massachusetts for twelve years, entered the hospital Sept. 26, 1914. History through interpreter. Family history negative. The patient had not been ill for twenty years except ten months ago when for one month he had diarrhea.

Present Illness.—Fever and weakness for three weeks. Burning sensation rather than real pain in lower right front of chest in which region (eighth space and axillary line) he was tapped twice by his local doctor, "once dry, once blood." No cough, no gastric symptoms, no chills.

The physical examination showed dulness to flatness with diminished to absent breathing, voice and fremitus at right pulmonary base. Constant dry râles probably pleural. Dulness varied enormously with difference in percussion and with respiration. Slight Grocco's sign. In front slight dulness at fourth space varying a little with change of position. Heart negative. Abdomen rigid and tender in right upper quadrant. Rectal examination negative. Examination otherwise negative. Temperature 103, pulse 100, respiration 28.

Urine negative. Hemoglobin 80 per cent., whites 55,000, polynuclears 91 per cent. At entrance the right chest was tapped and 125 c.c. of yellow fluid obtained. Examination of the fluid showed specific gravity 1.016, albumin 4.5 per cent., cells 43,600 per cubic millimeter, polynuclears 68 per cent. No bacteria. No growth on various culture mediums. Some of the fluid was injected into a guinea pig which showed nothing at necropsy November 2. Blood culture negative. Wassermann negative. Echinococcus fixation test negative. The stools on several examinations were negative for blood, ova and amebae. The temperature, pulse and respiration slowly drifted down and were normal after October 19. The signs increased and on October 3, it was noted that the spasm persisted in the right upper quadrant of the abdomen. There was a definite bulging of the lateral chest wall on the right over the usual situation of the liver, the interspaces were obliterated and there was a curious boggy feel over this situation. The right side measured 42.5 cm., the left 39.5 cm. This bulging slowly disappeared and had disappeared on October 28. At that time the right side measured 41.5 cm. and the left side 40 cm. The interspaces were then normal and there was no bulging and no spasm or tenderness. The physical signs, however, showed the evidence of a high diaphragm on the right, even at discharge. Roentgenographic examinations were made September 28, October 3 and October 9. The examination on September 28 showed a high diaphragm on the right, moving very little with respiration. The angle between the diaphragm and the chest wall was hazy. The lungs were negative. The interpretation by Dr. Holmes was of probable subdiaphragmatic abscess. The two subsequent roentgenograms showed that the diaphragm was still high. It was the opinion of the roentgenologist that the diaphragm was probably fixed in that position by the inflammatory process.

The points of special interest in this case are (1) the signs referable to the abdomen, namely, the persistent rigidity and tenderness in the right upper quadrant; (2) the presence, as in Case 1, of a sterile fluid above the diaphragm apparently secondary to the process below the diaphragm; (3) the rather definitely localized signs of inflammation causing bulging of the chest wall, obliteration of the interspaces and change in palpation; (4) the persistence of the high diaphragm after the attack as in Case 3.

DISCUSSION

The four cases presented show certain differences, but on the whole seem to fall naturally into a single group. The lesion in each case was below the diaphragm on the right side. The important distinguishing feature is the spontaneous recovery. So far as I know similar cases have not been previously described. It seems probable that other cases have been diagnosticated as lesions above the diaphragm and have escaped notice. It is only by the Roentgen ray that the diagnosis can be positively made. This study contributes very little to the etiology. The finding of colon bacilli in one case is of doubtful significance. One case occurred eighteen days after operation, but the connection is not clear. Three cases occurred spontaneously. It seems obvious that the condition must be of infectious nature.

In all the cases the preliminary diagnosis was a lesion of the lungs or pleura. In two cases the symptoms were largely pulmonary. In one of these two cases and in another case a sterile exudate was demonstrated above the diaphragm. In this respect again these cases resemble the cases of subdiaphragmatic inflammation which go on to suppuration. In the three cases seen in the acute stage there was an active leukocytosis, 55,000 per cubic millimeter being recorded in one case. No patient had chills. The temperature was irregularly elevated and tended to fall gradually. The duration of the fever was from eight days to four weeks.

The physical signs were primarily those of a high diaphragm on the right. The important features of the signs which were constant were the discrepancy of dulness according to the force of percussion, the descent of dulness with inspiration and the presence of Grocco's sign on the opposite side. The signs and the roentgenographic observations were closely parallel. In two of the cases the diaphragm remained high after the disease had run its course and in the other two the diaphragm returned to its normal position.

While these cases were under observation there was an opportunity to study a case of perinephritic abscess verified by operation. In that case there was also dulness at the base of the lung which varied with respiration and also with the force of percussion. However, there was no Grocco's sign. There was considerable costovertebral tenderness. Repeated roentgenographic examinations failed to show a high diaphragm and did not correspond to the percussion findings.

One case of presumable liver abscess, not verified, however, by operation or necropsy, showed signs that were at first confusing. However, both the Roentgen ray and the clinical signs showed that the diaphragm was high on both sides. There was no Grocco's sign. This patient had chills and a very irregular temperature. Jaundice and ascites finally developed before the fatal termination. Of course, in this series of cases the lesion is directly over the liver. It does not seem probable, however, that the liver is involved.

In several cases of large abdominal tumors which have pressed up the diaphragm, somewhat similar physical signs were found, including a Grocco's sign on the opposite side of the chest. The roentgenogram also shows a high diaphragm. Some of these cases were mistaken at first for abnormal conditions above the diaphragm. These cases, of course, are differentiated by the absence of fever, leukocytosis, acute signs and the presence of abdominal masses.

A search of the records of the Massachusetts General Hospital shows that suppurative processes below the diaphragm are not rare. I was able to find two cases which presented sufficient evidence to warrant their inclusion in this group. I saw neither case.

CASE 5.—E. M. (156665), a Hebrew, aged 37, entered Dec. 11, 1907. Family and past histories were negative. His symptoms were indefinite, the main symptom being abdominal pain for three months. His examination was recorded as negative. His urine and blood were negative. The temperature was slightly irregular, the maximum being 102. He complained of some pain in the right chest. He left the hospital on December 31. He was seen in the out-patient department and his right chest was strapped for pleurisy. He reentered the hospital Jan. 28, 1908. At that time he had no fever and considered himself well. Examination, however, showed increasing dulness below the angle of the scapula on the right with diminished to absent breathing in the same situation. Exploratory paracentesis just below the angle of the scapula gave "a few cubic centimeters of pus." A culture from this pus on blood serum showed no growth. The roentgenographic report was "a bulging of the right diaphragm. Lungs negative." He was operated on and the pleural cavity explored but found to be normal. He had an uneventful convalescence and was discharged well. He reported again April 7, 1909, a little over a year later. He considered himself well since discharge. The physical examination at that time was negative. There was no roentgenogram.

It seems probable that the pus obtained by puncture came from below the diaphragm in view of the negative exploration of the pleural cavity. It is evident that not sufficient reliance was placed on the roentgenographic examination.

Case 6.—W. M. (160988), an American waiter, aged 31, entered the hospital Nov. 4, 1908. Family and past histories were negative. He used alcohol to excess and was drunk at time of entrance. For one week he had had dull pain in the right lower chest. No other complaint.

Physical examination was entirely negative except for some epigastric tenderness. His temperature was 101, pulse 120. Urine negative. Leukocyte count 19,000. Blood culture negative. The temperature steadily averaged 101, drifting to normal on December 2. The leukocyte count varied between 13,000 and 19,000. On November 12, eight days after entrance it was noted that there was dulness at both bases behind, left more than the right. "The dulness on the right begins at the angle of the scapula, on the left an inch and a half above the angle of the scapula, changing into flatness below the angle of the scapula. Breath sounds and fremitus are diminished on the right and diminished to absent on the left." The roentgenographic examination showed that the diaphragm was exceptionally high and was higher on the left than on the right. The diaphragm moved slightly on the right but was fixed on the left. The right lung was entirely clear; there was evidence of pleural thickening on the left. The case was an extremely puzzling one. Exploratory punctures were made on both sides just below the angles of the scapulae but without result. The signs entirely cleared up and he was discharged well Dec. 11, 1908, with the diagnosis of presumable subdiaphragmatic abscess which had spontaneously absorbed.

The striking feature in this case in contrast to the other cases is that the signs were on both sides and were more marked on the left. In all the other cases the signs were limited to the right side. There is no reason to presume that the lesion may not be present on the left side as well as on the right.

These two cases are included merely to show the probable frequency of the condition. Case 5 suggests how other cases are overlooked. In Case 5 the condition was considered to be a pleural empyema, despite the roentgenographic evidence. It seems probable that there are a goodly number of obscure cases diagnosticated as pleural inflammation which the Roentgen ray might definitely prove to belong to this group.

CONCLUSION

This small group of cases presents a syndrome of signs and roentgenographic findings of which the most plausible interpretation seems to be that an inflammatory process of unknown etiology may be situated below the diaphragm, which does not go on to suppuration but which recovers spontaneously.

Science as a Balance-Wheel.—Thinking and doing are for the time out of balance. Science has the power to restore and maintain the balance by breathing more of its spirit into practical life, and if an instrument to guide this work is needed—if it is right for men of science to have a confession of faith—I know of none more inspiring than the words that Huxley used in defining his own life purpose. To promote the increase of natural knowledge and to forward the application of scientific methods of investigation to all the problems of life to the best of my ability, in the conviction which has grown with my growth and strengthened with my strength, that there is no alleviation for the sufferings of mankind except veracity of thought and of action, and the resolute facing of the world as it is when the garment of make-believe by which pious hands have hidden its uglier features is stripped off.—Ross G. Harrison, *Science*.

HEREDITARY ANIRIDIA

AN INTERESTING FAMILY HISTORY *

S. D. RISLEY, M.D.

PHILADELPHIA

The case history here presented, together with the striking family history of heredity, is regarded of sufficient interest for publication.

George McL., aged 27, was referred to my Wills Hospital service, Nov. 2, 1914. The right eye had been lost from some unknown cause in childhood and presented a shrunken stump. If his statement is to be accepted, he had recently suffered a sudden and serious impairment of vision in the left eye, but the "vision had never been good." So far as he knew, the eye had not been subjected to any accident. Inspection revealed an aphakial eye with entire absence of the iris. No rudimentary trace of that membrane could be discovered. The retina was detached, and ruptured from before backward, the site of rupture being to the nasal side of the vertical meridian in the lower half of the globe. The vitreous was fluid and well filled with freely floating shreds of opacity which appeared gray by oblique illumination. When these were allowed to subside, a faint or much blurred view of the upper posterior portion of the fundus could be had with the electric ophthalmoscope. In this portion of the fundus the retina did not seem detached and with it he could with difficulty count fingers and see to walk about the ward. The lens was not in situ, and no trace of it could be discovered in the vitreous chamber.

It seems probable that the sudden loss of vision was due to the separation of the retina. The fluidity of the vitreous body, the floating exudate, the condition of that portion of the fundus still possible to study, the dilatation of the anterior ciliary vessels, and the general external discoloration of the anterior segment of the ball, all point to a long standing uveal disease.

It was discovered that in July, 1914, a cousin of the patient had been under treatment in the hospital, also with aniridia. Inquiry revealed the fact that the condition was prevalent in the family. The patient's mother had double aniridia, and he had a son and daughter both of whom were aniridic in both eyes. I am indebted to Dr. Carson, then the junior house surgeon, for the following remarkable history of transmission of an ocular anomaly through four generations. The patient belongs in the third generation. The condition of the eyes of John F., Sr., and his wife, is not known, but their son John F., Jr., had double aniridia, his wife having normal eyes. From this stock there were 117 descendants, 234 eyes. In the first generation, therefore, the male progenitor had double aniridia, that is, two aniridic eyes.

In the second generation there were four males and nine females, all of them suffering from double aniridia, giving a total of twenty-six eyes with this abnormality of development.

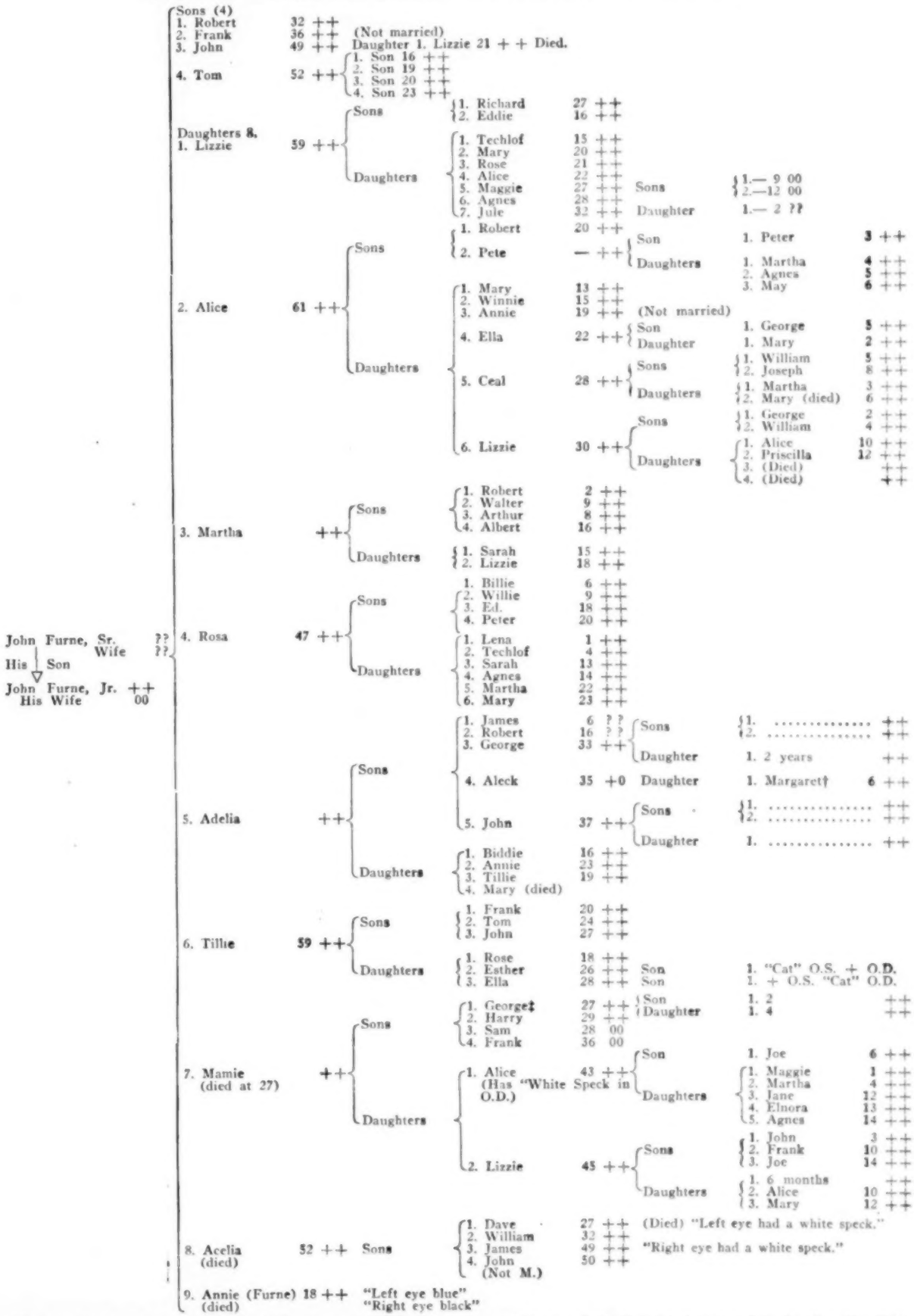
In the third generation, to which the patient belongs, there were thirty-two males and thirty-one females. The patient had but one eye in which the presence of the aniridia could be demonstrated, the other eye having been lost in childhood, and there were four individuals, eight eyes, in which the condition was not known. The remaining fifty-five eyes had no iris. Of the thirty-one females, with sixty-two eyes, all had aniridia. The total number of eyes in the third generation was 117.

In the fourth generation there were nineteen males known to have aniridia and two eyes known to have cataract; and twenty-three females with forty-four aniridic eyes, the condition of two eyes not being known. That is to say, in this generation there were forty-two individuals with seventy-six eyes in which the iris was absent, the condition of the remaining eight eyes not being known.

As an illustration of the persistence of a hereditary anatomic anomaly, I know of no more striking history

* Read before the College of Physicians in Philadelphia.

FAMILY OF MR. JOHN FURNE, JR., AND DESCENDANTS, SHOWING ANIRIDIA*


Sons (4)
1. Robert 32 ++
2. Frank 36 ++ (Not married)
3. John 49 ++ Daughter 1. Lizzie 21 + + Died.
4. Tom 52 ++
1. Son 16 ++
2. Son 19 ++
3. Son 20 ++
4. Son 23 ++
Daughters 8.
1. Lizzie 59 ++
Sons
1. Richard 27 ++
2. Eddie 16 ++
Daughters
1. Techlof 15 ++
2. Mary 20 ++
3. Rose 21 ++
4. Alice 22 ++
5. Maggie 27 ++ Sons 1.— 9 00 2.—12 00
6. Agnes 28 ++
7. Jule 32 ++ Daughter 1.— 2 ??
2. Alice 61 ++
Sons
1. Robert 20 ++
2. Pete — ++ Son 1. Peter 3 ++
Daughters 1. Martha 4 ++ 2. Agnes 5 ++ 3. May 6 ++
Daughters
1. Mary 13 ++
2. Winnie 15 ++
3. Annie 19 ++ (Not married)
4. Ella 22 ++ Son 1. George 5 ++ Daughter 1. Mary 2 ++
5. Ceal 28 ++ Sons 1. William 5 ++ 2. Joseph 8 ++ Daughters 1. Martha 3 ++ 2. Mary (died) 6 ++
6. Lizzie 30 ++ Sons 1. George 2 ++ 2. William 4 ++ Daughters 1. Alice 10 ++ 2. Priscilla 12 ++ 3. (Died) ++ 4. (Died) ++
3. Martha ++
Sons
1. Robert 2 ++
2. Walter 9 ++
3. Arthur 8 ++
4. Albert 16 ++
Daughters
1. Sarah 15 ++
2. Lizzie 18 ++
John Furne, Sr. ?? Wife ??
His Son
John Furne, Jr. ++ His Wife 00
4. Rosa 47 ++
Sons
1. Billie 6 ++
2. Willie 9 ++
3. Ed. 18 ++
4. Peter 20 ++
Daughters
1. Lena 1 ++
2. Techlof 4 ++
3. Sarah 13 ++
4. Agnes 14 ++
5. Martha 22 ++
6. Mary 23 ++
5. Adelia ++
Sons
1. James 6 ? ? Sons 1. ..... ++ 2. ..... ++
2. Robert 16 ? ?
3. George 33 ++ Daughter 1. 2 years ++
4. Aleck 35 +0 Daughter 1. Margaret† 6 ++
5. John 37 ++ Sons 1. ..... ++ 2. ..... ++ Daughter 1. ..... ++
Daughters
1. Biddie 16 ++
2. Annie 23 ++
3. Tillie 19 ++
4. Mary (died)
6. Tillie 59 ++
Sons
1. Frank 20 ++
2. Tom 24 ++
3. John 27 ++
Daughters
1. Rose 18 ++
2. Esther 26 ++ Son 1. "Cat" O.S. + O.D.
3. Ella 28 ++ Son 1. + O.S. "Cat" O.D.
7. Mamie (died at 27) ++
Sons
1. George‡ 27 ++ Son 1. 2 ++ Daughter 1. 4 ++
2. Harry 29 ++
3. Sam 28 00
4. Frank 36 00
Daughters
1. Alice (Has "White Speck in O.D.) 43 ++ Son 1. Joe 6 ++ Daughters 1. Maggie 1 ++ 2. Martha 4 ++ 3. Jane 12 ++ 4. Elnora 13 ++ 5. Agnes 14 ++
2. Lizzie 45 ++ Sons 1. John 3 ++ 2. Frank 10 ++ 3. Joe 14 ++ Daughters 1. 6 months ++ 2. Alice 10 ++ 3. Mary 12 ++
8. Acelia (died) 52 ++ Sons
1. Dave 27 ++ (Died) "Left eye had a white speck."
2. William 32 ++
3. James 49 ++ "Right eye had a white speck."
4. John 50 ++ (Not M.)
9. Annie (Furne) (died) 18 ++ "Left eye blue" "Right eye black"

* In this table the sign + indicates aniridia; 0, no abnormality in eye; ?, condition of eye not known. Figures after names indicate approximate ages.

† Patient in Wills Hospital, July 9 to July 28, 1914 (Dr. Fisher).
‡ Patient in Wills Hospital, Nov. 2, 1914 (Dr. Risley).

than is furnished by this family. We are familiar with the unfailing transmission of mental defects to the descendants of the feeble-minded and criminal classes, but it is open to question whether an anatomical anomaly like aniridia can be regarded fairly as an analogous condition.

Any effort to explain the essential nature and cause of aniridia would, in the present state of our knowledge, lead to unprofitable speculation in the realm of embryology, or the mechanical explanation of Mendel's law of heredity as set forth by De Vries. I can conceive no explanation for the ectodermic and mesodermic structures composing the iris failing to develop beyond the scleral ring after the formation of the choroid and ciliary portion of the uvea. It is of interest to note that the lens is usually present and transparent, and in a case of aniridia reported by Dr. Reuling,* he was able to demonstrate that the range of accommodation was not impaired.

SUMMARY

One son. 2 eyes (aniridic).

Second generation; male, four: 8 eyes; female, nine: 18 eyes.

Third generation (patient belongs here); male, thirty-two: 55 eyes (condition of four individuals not known); female, thirty-one: 62 eyes.

Fourth generation; male, nineteen: 32 eyes, 2 eyes cataractous; female, twenty-three: 44 eyes (condition of two eyes not known).

2018 Chestnut Street.

POSSIBLE TUBERCULIN REACTION IN THE BREAST-FED CHILD AFTER DIAGNOSTIC DOSE TO THE MOTHER

GEORGE THOMAS PALMER, M.D.

Director of the Springfield Open Air Colony and Medical Director of the Springfield Tuberculosis Dispensary

SPRINGFIELD, ILL.

Tuberculin, both in diagnosis and in treatment, has suffered so much through the recklessness and carelessness of those who have not given sufficiently serious thought to its use, that those who have come to have even limited confidence in this very potent agency feel that they must protect its reputation by placing every safeguard about its employment. While pharmaceutic houses are making the administration of tuberculin attractively simple and easy, those who would not see it discredited must sound constant warning and urge that it be used always with the utmost caution.

On the other hand, while recognizing the dangers of the injudicious use of tuberculin, we must scrutinize the reports of untoward results, that the agent shall not suffer from faulty observation and erroneous conclusions or be the victim of simple coincidence.

Most of us recall the case cited by H. L. Barnes,[1] in which he had intended using tuberculin, but decided not to do so. Two days later, the patient died of hemoptysis. Had the tuberculin been administered as originally proposed, the hemoptysis and death would have been charged to it. In a like case, reported by Frazer and Biggs,[2] paraplegia developed the day before he was to have received tuberculin. The suspicion which would have arisen had the paraplegia developed two days later is not difficult to conjecture.

In my own experience in private, dispensary and sanatorium work, it had not occurred to me as hazardous to employ tuberculin for diagnostic purposes in nursing women. I had used it guardedly in this way from time to time and had witnessed many pronounced reactions without the slightest disturbance in the infant, although I am convinced that in three instances, at least, the breast-fed infants were clinically tuberculous at the time the mothers were given the test.

The following case is interesting in that it suggests one of two things: That, possibly, greater care should be exercised in the use of tuberculin in diagnostic dose in the nursing mother, or that the element of coincidence should be taken fully into consideration in interpreting unfortunate complications which may occur after tuberculin has been used.

F. L. P., aged 6 months, was the apparently healthy child of F. P., a man aged 30, suffering from open pulmonary tuberculosis, and of M. L. P., a woman aged 30, who had been in poor health since the child's birth.

Physical examination of the mother elicited nothing on which a definite diagnosis could be based; but, in addition to her poor health, it was ascertained that her father had died of tuberculosis and that one brother and two sisters were supposed to be tuberculous.

In view of the necessity for removing the child from the breast in case the mother was tuberculous, a tuberculin test was decided on. A 1 per cent. dilution of old tuberculin, amounting to 1 mg., was given intradermally. This was followed by marked local reaction with some slight systemic reaction.

A day later, the nursing child, who was under the care of the family physician, was reported to have developed bronchitis or bronchopneumonia and, about a week after the injection of the mother, there were reported definite meningeal symptoms.

When I visited the infant, on the invitation of the family physician, I found evidence of extensive pulmonary involvement and of meningitis. The temperature was about 103 F., the face pale, the head thrown back and the neck rigid and there was conjugate deviation of the eyes. The posterior cervical glands were equally enlarged on either side and an isolated gland, the size of a small English walnut, was found under the sternomastoid muscle on the left.

Auscultation of the chest showed scattered mucous râles and tubular breathing over the left side. The liver extended two fingers' breadths below the costal margin.

The child died about ten days after the test had been given to the mother.

Assuming the tuberculous infection of this child, who had been cared for frequently by a father who was suffering from open pulmonary tuberculosis, and considering the great infrequency of any effect on the child from the reaction on the part of the mother, it seems highly probable that the relationship of the test and the child's acute illness was purely one of coincidence; and this is supported by the fact that, for two or three weeks prior to the acute illness, the child had been indisposed, the indisposition being attributed to "teething."

The literature on the effect on the breast-fed child of tuberculin test of the mother is very meager; but what there is of it seems to confirm the conclusion of coincidence in cases of this kind. Schlossmann[3] reports the injection of forty-nine nursing mothers

* Reuling: Am. Jour. Med. Sc., January, 1875.

1. Barnes, H. L.: Boston Med. and Surg. Jour., 1908, clix, 331.
2. Frazer and Biggs: Bull. Univ. of Penn., Med. Dept., March, 1901.
3. Schlossmann: Monatschr. f. Geburtsh. u. Gynäk., 1903, xvii, 1311.

followed by more or less reaction in eighteen, or 36.8 per cent. of cases, and in none of these was the child affected in any way.

While there is no question but that toxins as well as immune substances may be transmitted through the milk, it seems hardly probable that, in this case, sufficient tuberculin could have reached the child to cause the slightest disturbance. It seems much more likely that, in this unquestionably tuberculous child, the acute illness, terminating in miliary tuberculosis, meningitis and death, had already begun, perhaps at the advent of the disturbance attributed to teething, two or three weeks before the test was given to the mother. The reasonable assumption is that the terminal disease was due to the dissemination of antigen from the large gland found under the sternomastoid muscle.

However, in our present incomplete knowledge of the action of tuberculin and its possible far-reaching effects, every case which may suggest further study and the employment of greater caution is worthy of serious consideration. Likewise, it is important, by the citation of such cases as this, to avoid unwarranted conclusions as to baneful influences of a diagnostic agency without which the early diagnosis of tuberculosis would be infinitely more difficult if not impossible.

ONE SOURCE OF INFECTION IN CLEAN SURGICAL CASES *

MARSH PITZMAN, M.D.
ST. LOUIS

The occurrence of a group of several cases of infection in strong patients after simple clean operations somewhat over a year ago brought this subject acutely to my attention. The cases to be reported are of patients operated on by Dr. P. Y. Tupper in five of the large private hospitals of St. Louis, in which I acted as first assistant. Whereas theoretically no such thing as an aseptic operation is possible, practically good asepsis prevents infection in the overwhelming majority of a competent surgeon's non-infective cases. Our results were not satisfactory to us, but where was the practical error in our asepsis chain?

TABLE 1.—INFECTIONS NOTED DURING THE PERIOD BETWEEN NOVEMBER, 1909, AND DECEMBER, 1913*

Hospital	Chronic Appendix		Pelvic Non-suppurative		Hernia		Thyroid		Breast		Non-classified	
1	3	58	2	27	1	25	0	7	0	17	1	9
2	0	16	2	14	1	13	0	5	0	7	0	4
3	0	13	0	9	0	10	0	2	0	4	0	0
4	0	9	0	6	0	5	0	1	0	3	0	5
5	0	10	0	1	0	2	0	0	0	2	0	2

* In this and the following table the left hand column of figures represents cases of infection; the right hand column the number of operations.

To obtain a clearer understanding of the real state of affairs it was determined to tabulate our results according to hospitals. Many cases unquestionably have a minor infection, characterized by slight tenderness and induration of the wound, which subsides in a few days of rest without further disturbance. Our standard of infection was that the local evidence of infection plus fever kept up after the normal postoperative reaction, and was only relieved by the discharge of pus. Secondary infection of the wound was eliminated from the series (1) by excluding all cases having active pus foci elsewhere, as in such cases there is always a possibility of metastatic infection; (2) by not removing the dressing of clean cases until the union was firm; (3) by the exclusive use of absorbable ligature in such cases. It was determined to exclude from this consideration all drainage cases, except uncontaminated blood, because they do not yield themselves to an exact classification as to the presence or absence of an extrinsic infection.

Hospital 1 showed 7 infected cases out of 141, approximately 5 per cent. Hospital 2 showed 3 infected cases out of 59, again approximately 5 per cent. Hospitals 3, 4 and 5 showed no infected cases out of 39, 28 and 17 cases, respectively.

While in general, of course, we realized that our results varied in the different hospitals, the actual tabulations proved a surprise. This series includes all cases, so that in some instances acne, poor general resistance or even errors in operative procedure may have been responsible for the infection. For example, our first infection in an interval appendix operation at Hospital 1: The incision was median and disclosed a very firmly bound down cecum which presented, at that stage of our development at any rate, great technical difficulties. The further clinical course suggested hemorrhage with secondary infection and after a critical stormy period posterior drainage gave relief. However, as the original wound became infected, this case is included in the series for the sake of completeness; but many of the infections tabulated were in normal strong patients with no theoretic excuse to offer. That the other infections were all mild in character, that no thromboses, fascia sloughs or severe secondary hernias resulted is no extenuation, but simply a matter of good fortune. For the surgeon has no control over the extrinsic infections and eventually those of a serious type will appear.

As the class of cases and the operators were the same in the different hospitals, the working hypothesis of some error in operating-room technic seemed justified. Up to this stage we had worked on the assumption that we ourselves were to blame, realizing, however, the other possibility. The essentials of our asepsis have remained unchanged throughout. These as we interpret them are:

The use of rubber gloves in all major cases (for the past year a heavier grade of gloves has been found not to interfere with our work, and as they give better wear, are much more satisfactory); keeping our hands out of pus, more especially of a fresh virulent type; and wearing long-sleeved gowns and a mask over the mouth and nose. The skin of our hands is kept in normal condition by the liberal use of soap and warm water, and the sparing use of the chemical germicides. Our patients are prepared by shaving, and, just before operations, by ethereal soap, washed off by weak mercuric chlorid, and are painted with dilute iodin, which is in turn washed off with alcohol. The same knife that makes the skin incision in normal skin is used throughout the operation, as, practically, we do not believe that the normal skin or mucous membrane bacteria are sufficiently virulent to cause clinical infection of the wound. While, theoretically, infection might be so caused, practically we believe this theory is used as a mask to cover other serious errors of technic.

* From the case records of Dr. P. Y. Tupper, for whose permission to publish this report my thanks are hereby acknowledged.

The nursing corps and the house-surgeons were naturally constantly changing in the various hospitals throughout the years tabulated, without any appreciable change in our general results. So that even though we might have been at first so tempted, it is illogical to attribute our infections to the changing personnel. The error must be sought deeper. Further general impressions of carefulness and carelessness in the operating room service differed markedly from our tabulated results. For while Hospital 3 gave the impression of great care and yielded ideal results, Hospital 2, which was extra careful and fussy, yielded most indifferent results. Further, Hospital 4, which is busy, rushed, short of help and apparently careless, showed no case of infection.

The preparation and care of sponges and dressings in all hospitals was fairly uniform and apparently satisfactory, and at any rate no difference sufficient to account for our results showed up. But when the preparation of the instruments was considered, we found that whereas all hospitals boiled most of our instruments for about twenty minutes under pressure, our knives and scissors were boiled only in Hospitals 3, 4 and 5. Hospitals 1 and 2, in which all our infections occurred, used a carbolic-acid-alcohol method of knife-scissors sterilization. Here was the first lead that promised to account for our troubles, and, frankly, the first time we realized that our knives and scissors were not being boiled at all the hospitals. We trusted to the technic of the various operating rooms on the theory that they would work at best advantage with the least possible interference.

Was this fact a real lead or simply a remarkable coincidence? For everybody knows the common comparison with statistics and, further, out of the ordinary coincidences invariably receive publication. If this non-boiling of knives and scissors was really a big factor in our infections (not the only one we are frank to admit) then the boiling of these instruments would be followed by an improvement in our results. The following table shows our results from that time to date.

TABLE 2.—NUMBER OF INFECTIONS NOTED FROM DECEMBER, 1913, TO FEB. 15, 1915

Hospital	Chronic Appendix		Pelvic Non-suppurative		Hernia		Thyroid		Breast		Non-classified	
1	0	11	0	5	1	4	0	2	0	4	0	1
2	0	12	0	10	0	3	0	0	0	7	0	3
3	0	3	0	4	0	3	0	0	0	4	0	4
4	0	0	0	1	0	1	0	0	0	1	0	1
5	0	5	0	1	0	0	0	0	0	0	0	2

Since this change in our technic we have had only one infected case and that one excusable, for the patient was a fat anemic man, obviously a poor risk. Our incidence of infections fell from 3.5 per cent. as shown in the first table to 1.1 per cent. in the second series.

Granting the completeness and honesty of this report, only two conclusions are possible—either a most remarkable series of coincidences, or in general surgical practice unless special precautions are taken, knives and scissors must be boiled.

On quizzing the nurse in charge of the operating-room in Hospital 4, she replied, "Yes, we boil knives and scissors! If the surgeon requests the solution method, we boil them first and then use his pet method. It works out better!" I am not quoting this as a model of hospital discipline, but as the mature opinion of an intelligent observer.

Is this subject a live topic for discussion before the surgeons of to-day? My observation has shown that many surgeons of St. Louis, consciously, and some unconsciously, use an insufficient knife-scissors sterilization process, and after all St. Louis mirrors fairly the surgery of the world. Consequently I feel justified in taking up the generally accepted facts back of the problem.

Why do many surgeons object to the boiling of their knives? The main objection is that the boiling dulls the edge, and this certainly holds true if the blade-edge is jumbled against the other instruments in the process of boiling. The knife and the scissors should be wrapped in gauze and boiled separately from the other instruments for about three minutes. Let me emphasize that this process will not take the place of a preliminary sharpening of the knife, but, on the other hand, it will not materially affect the sharpness of the edge. This procedure would not protect against the danger of spore-infection, which would require either longer boiling under pressure or a preliminary treatment of the knife with the free halogens, chlorin, bromin or iodin. As the spore diseases, tetanus, anthrax, etc., are unusual in an ordinary operating-room, practically this more strenuous sporicidal effort is but rarely necessary.

Alcohol and carbolic acid, however, the enthusiast's object, kill the ordinary infective germs certainly within the time limits allowed. This is perfectly true, but it must not be forgotten that it only holds true if the germicide actually reaches the bacteria. If in practice there is any dried body-fluid or grease on the knife, then these germicides fail to penetrate and are consequently powerless. If the knife is mechanically perfectly clean and the grease is removed by some solvent, then the carbolic-acid-alcohol method is theoretically and presumably practically perfectly satisfactory. Some very delicate instruments, which boiling would injure, justly depend on these chemical methods. On the other hand, for ordinary surgical work, the much simpler process of boiling does dissolve off grease and secretion, so that the blade gets the full germicidal effect.

A last word in regard to the germicidal power of alcohol. In spite of unanimous scientific proof, the general surgical world has not yet learned that 50 per cent. alcohol is a much stronger germicide than 100 per cent. The chop logic still holds sway that if 50 per cent. is good, then 100 per cent. is better. As a matter of fact, absolute 100 per cent. alcohol is not a germicide at all and a 50 per cent. solution is very much more effective than the commonly used 95 per cent. solution, and half the price.

On these clinical and theoretic considerations rests my contention that the general surgeon's knife should be boiled.

Wall Building.

The Engineer and Health Departments.—No state can be considered abreast of the times until its state health department has a division or bureau of public health engineering, charged with the duties of advising and supervising in matters relating to water supplies, sewerage systems, the disposal of garbage and trade wastes, the control of industrial hygiene, and the sanitary control of public buildings.—*Public Health Reports*, Feb. 5, 1915.

New Instruments and Suggestions

BLOOD TRANSFUSION SIMPLIFIED BY USE OF NEW METHOD AND APPARATUS

HENRY W. ABELMANN, M.D., CHICAGO

The chief object of the method and apparatus is to provide a way and means by which the transfer of blood can be accomplished by one person in a simple, safe and reliable manner. The principles involved to prevent the coagulation of blood (sodium citrate and petrolatum) are nothing new. Their joint application, however, combined with the employment of technic and apparatus, constitutes a very definite and new principle which makes the successful transfusion of blood possible.

METHOD

Preparation of Syringe.—After the syringe has been sterilized, petrolatum (heated to the liquid state) is taken up through the needle so that the inner surface of the syringe is coated. This coating facilitates the easy sliding of the piston and renders barrel and plunger air tight. After the syringe has been prepared in this manner it is filled with 5 c.c. of a 1.5 per cent. sodium citrate in 85 per cent. sodium chlorid solution, which excludes air from the lumen of the needle and syringe. The petrolatum coating and the solution prevent the coagulation of blood. The syringe is now ready for use.

Preparation of Patient and Donor.—The flexor surface at the bend of the elbow is sponged with 95 per cent. alcohol and then a moderately tight tourniquet is placed around the arm to distend the veins.

Aspiration of Blood.—The transfusion needle is thrust into the most prominent of the donor's veins. As soon as the barrel is filled with blood, the tourniquet is removed and the needle withdrawn. Then 5 c.c. of the solution are taken up and the syringe laid on the tray provided for this purpose and the needle removed.

Injection of Blood.—The hypodermic syringe fitted with the transfusion needle and filled with 10 m. of the solution is taken and the needle is thrust into the most prominent vein of the recipient. As soon as the needle enters the vein, the blood pressure will push the plunger outward, which is a sufficient proof to the physician that the needle is in the lumen of the vein. The tourniquet is now quickly removed and the contents of the hypodermic syringe emptied into the vein. Now the hypodermic syringe is disengaged, and the one filled with blood is connected and its contents injected into the recipient's vein.

If more than 120 c.c. of blood is to be transferred, the needle is left in the vein until two or three syringes are filled with blood. These are placed on the tray and injected in turn into the recipient's vein. With the transfusion of more than 360 c.c. of blood, larger syringes are necessary or else assistance is required. Although the method is practicable in all cases in which transfusion of blood is advisable, it is particularly applicable in the treatment of those diseases which require the administration of small and repeated doses to bring about the best results.

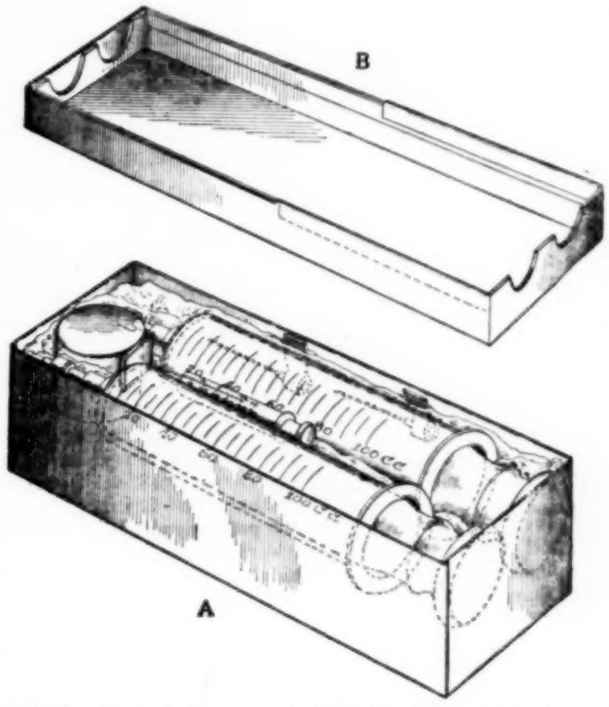


Fig. 1.—*A*, transfusion case packed, which can be carried in the coat pocket; *B*, cover for case which, when extended, serves as syringe tray (Fig. 2 *A*).

APPARATUS

The apparatus consists of a box containing the syringes, transfusion needles and solution cup (Fig. 1, *A*). It is sufficiently compact to be carried in a coat pocket. The box is of aluminum, and is therefore light in weight and easily kept clean. The extension cover of the container (Fig. 1, *B*), is utilized as a syringe tray, its construction being such that when employed for this purpose it has stationary syringe-holding portions accommodating as many as three syringes, holding them in properly spaced relations and preventing them from rolling away (thus avoiding breakage). They also serve in keeping the transfusion needles and pistons in the sterilized field (thus avoiding contamination). The syringe-holding portions also prevent the piston from sliding, which obviates the inadvertent dripping of blood or the entrance of air into the syringe. The extended portion of the cover can serve as a drip pan, and is telescopically engaged with the remainder of the cover.

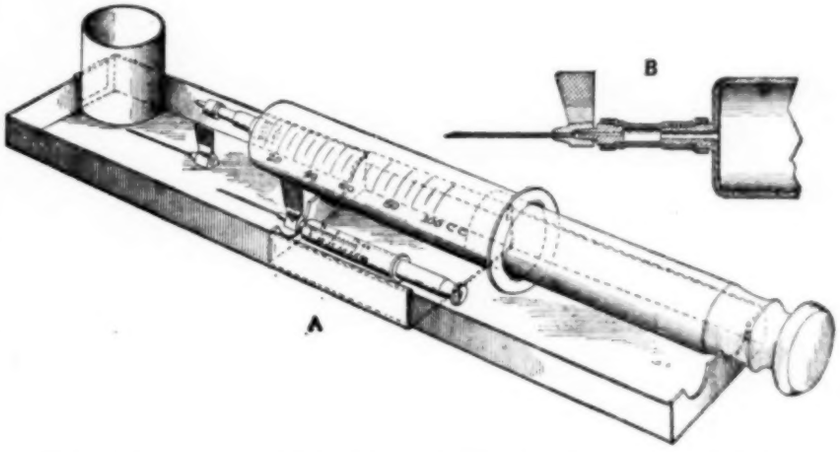


Fig. 2.—*A*, box cover extended, serving as syringe tray and dip pan; *B*, longitudinal section of syringe.

The syringes preferably are all glass.

The transfusion needles (slip-joint and interchangeable with the syringes) are provided with a guide which serves to indicate the correct position of the cutting edge of the needle and as a gripping portion, which lends ease and control to the operation, and also by means of which it can be handled without the danger of contaminating the needle. The needle is attached to the syringe by means of a rubber tube. By using the flexible connection between needle and syringe, it is possible to hold the syringe in various positions and at the most convenient angle without affecting the position of the needle, thus minimizing the possibility of traumatizing the vein (Fig. 2, *B*).

A NASAL DRESSING FORCEPS

OTIS ORENDORFF, M.D., CANON CITY, COLO.

For a long time I have felt the need of a delicate nasal dressing forceps with a curved tip, and with the assistance of F. A. Hardy & Co. I have evolved the instrument illustrated herewith. This can be used in many places in the nasal cavities when one wishes to pack or sponge or remove a dressing or débris around the corner. It can be held with the tip vertical when used in the superior cavities, as in the Mosher operation, or can be turned at any angle to the right or the left when reaching around a convex septum, and will also be found a convenient instrument in turbinate work.

Nasal dressing forceps.

It is annoying to have a piece of loose tissue or packing slip out of the line of vision and yet to know exactly where it is and still be unable to reach it with a straight tip forceps. Workers in kindred fields, gynecologists, oculists, and dentists, have instruments similar to this one in constant use and could not get along without them.

The dominant idea in the construction is that of lightness so that the sense of touch, so essential in working in regions out of sight, is preserved to as great a degree as possible.

A CONVENIENT OFFICE SCREEN

WILLIAM H. DEADERICK, M.D., HOT SPRINGS, ARK.

A dressing room in an office of limited space is ordinarily impossible. Panel screens occupy valuable room and are always in the way when not in use. I have recently devised a curtain screen which has proved very convenient.

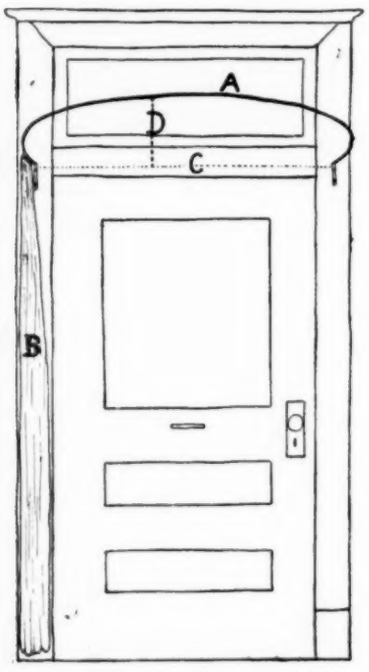


Fig. 1.—Curtain screen not in use, showing the various parts.

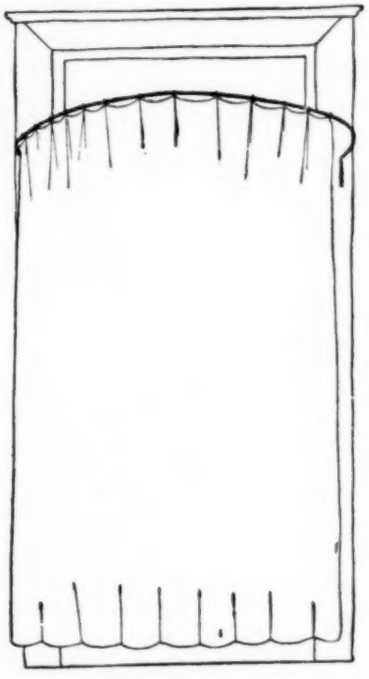


Fig. 2.—Curtain drawn.

It consists of an iron rod, *A*, ⅜ inch in diameter, curved in semicircular fashion, with the ends bent downward at right angles and flattened and bored to permit fastening to the door facing in a plane perpendicular to the door. To this is hung by rings a sheet, *B*, long enough to reach almost to the floor and wide enough to extend around the rod. The distance *C* is governed by the width of the door and is measured from center to center of the door facing. The distance *D* should be about 3 feet. The screen does not interfere at all with the use of the door.

The advantages of this screen are:

1. Its shape permits complete concealment of the patient from any part of the room.
2. Its location at the door utilizes space which could not otherwise be used.
3. It is simple and cheap.

PREVENTION OF INFLAMMATION FROM LEAKAGE DURING INTRAVENOUS INJECTION OF SALVARSAN AND NEOSALVARSAN

CHARLES A. MOBLEY, M.D., ROCK HILL, S. C.
Genito-Urinary Surgeon to the Fennell Infirmary

As is well known, during the intravenous administration of salvarsan, there occurs occasionally a leakage into the perivascular tissues. This may result from several causes.

1. The needle while entering the lumen of the vein may transfix the posterior wall of the vessel. When the flow of salvarsan is started the fluid distends the vein and may be forced out of the posterior vein injury.
2. In the use of the syringe method too much force may be applied in forcing the fluid into the circulation and a back leakage about the needle may result.
3. Even after having made a successful puncture, during the manipulation of adjusting the apparatus to the needle, its correct position in the vein may be changed. The first intimation of this fact is usually an exclamation of pain from the patient and the appearance of a swelling about the needle.
4. A diseased condition of the vein wall may, at times, account for the "kicking back" of the solution about the needle.
5. Not getting the needle point far enough into the lumen of the vein usually causes the solution to be extravasated.

There are probably other causes of this painful accident, but the preceding are the most common.

The result of the extravasation of solutions of salvarsan and neosalvarsan about the vein vary with the strength of the solution employed and the amount extravasated, from a painful, indurated swelling of slight extent, which disappears after a few days without further trouble, to an actual necrosis with the formation of a slough. The latter takes weeks to heal and is commonly followed by an extensive formation of scar tissue.

To prevent this injury I have devised the following technic: Do not allow assistant to remove tourniquet from about arm, but merely have him loosen same until it is certain that the solution is being successfully introduced. If a swelling appears or the patient complains of pain an extravasation has occurred. Immediately have tourniquet tightened, at same time withdraw needle, and with the free hand stroke vein with a firm pressure from tourniquet to within a short distance of point of needle entrance into vein. Hold the fingers at this point until a considerable hematoma is formed by blood flowing out of the hole in the vein into the surrounding tissues. Allow this hematoma to remain for a space of from fifteen to forty-five seconds, then have assistant place finger over the hole in vein (not hole in skin), and next proceed by a kneading process to milk out the fluid blood, forcing the hematoma out through the hole in the skin made by the entrance of the needle. This can be so successfully done that no trace of the hematoma will persist, not even slight discoloration. Lastly, put on a pad of gauze and hold with adhesive tape. Needless to say, speed in the performance of this maneuver is essential.

A NEW STAY STITCH FOR DEEP WOUNDS

EDMOND BONNOT, A.M., M.S., M.D., ST. LOUIS

This stitch is new to me, as I have never seen any description of it before. If such, however, has been used or devised previously, I apologize to the author. It is a great improvement on the ordinary method of closing a deep wound, especially of the abdomen.

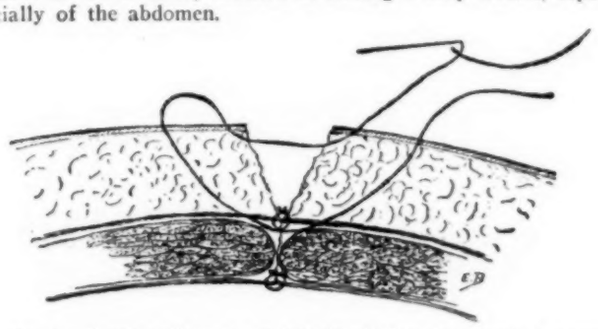


Fig. 1.—Showing silkworm gut introduced after deep fascia is closed with cat-gut.

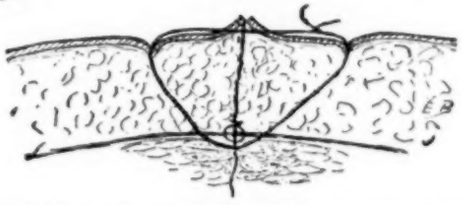


Fig. 2.—Showing skin everted, knot tied to the side of wound, and approximation of the parts.

This stitch, ordinarily speaking, is a mattress suture on the side, the deep layers being closed in their anatomic relations with catgut as usual. Silkworm-gut is used on a large curved needle which is inserted about an inch from the edges of the wound through and including the edges of the deep fascia, and out on the other side at the same distance from the wound. The needle is then passed back through the skin one-fourth inch from the edges and tied to one side of the wound (Figs. 1 and 2).

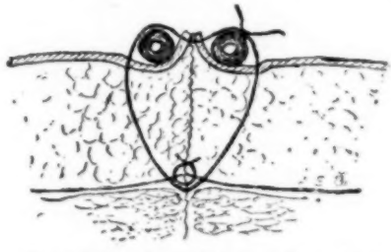


Fig. 3.—Showing rubber or glass tube on each side of wound.

The advantages are:

It gives complete support.

There is eversion of the skin edges.

Accurate approximation of the edges is obtained.

The knot to one side of the skin line facilitates the use of skin clips or other skin-closing material.

It lessens the scar, and with a rubber or glass tube on each side, may be left as long as desired without cutting the skin or causing cross scars (Fig. 3).

3329 Park Avenue.

AN AUTOSEROSALVARSAN APPARATUS

MODIFIED FROM THE M'CASKEY APPARATUS AND USING THE SWIFT-ELLIS TECHNIC

A. W. STAHL, M.D., DENVER

I have modified the McCaskey apparatus for autoserosalvarsan treatment, which was described in THE JOURNAL, May 30, 1914, p. 1709, so as to make it less complicated and more easy to sterilize and to operate. There are no rubber corks to become destroyed by heat or to loosen and allow leakage. The tubing and needles can be retained in original position throughout the procedure, and sterility is thereby insured. I find it convenient to enclose each needle in a separate small test tube before sterilizing, and to remove the test tube just before using the needle.

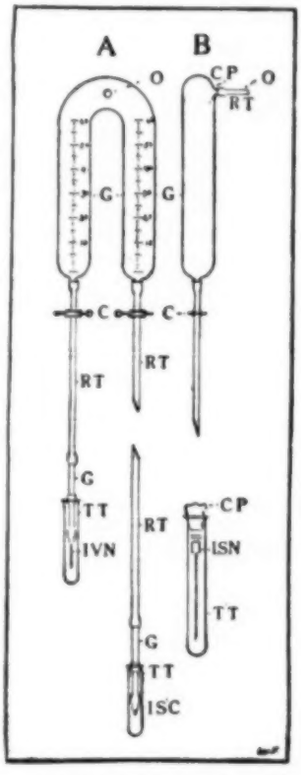
The apparatus consists of a graduated inverted U tube of glass, constricted at its lower extremities to receive ¼-inch rubber tubing, and supplied at the side of its upper rounded portion with an outlet to which is attached a short rubber tube fitted with a cotton plug.

The rubber tubes attached to the lower extremities are each supplied with a clamp, 1 inch from the U tube, and are also fitted with short pieces of glass tubing near their lower extremities. The one rubber tube is 8 inches long and terminates in an intravenous needle. The other rubber tube is 3 feet long and terminates in a connection for the intraspinal needle. Both of these terminals are enclosed in small glass test tubes. The intraspinal needle is also placed in a test tube fitted with a cotton plug.

DIRECTIONS FOR USING THE APPARATUS

Place 20 c.c. of normal salt solution in the intraspinal arm of the inverted U tube and sterilize entire apparatus at 20 pounds steam pressure.

Give patient intravenous salvarsan in the usual way. Wait from one-half to three-quarters of an hour and then insert the intravenous needle of the apparatus into the patient's vein. Loosen the clamp on the intravenous tube and produce suction through the upper outlet, filling the intravenous arm of the inverted U tube to 50 c.c. Then clamp the rubber tube again and remove the needle from the vein.



Autoserosalvarsan apparatus: *A*, front view; *B*, side view; *G*, glass; *C*, clamp; *O*, outlet; *R T*, rubber tubing; *C P*, cotton plug; *T T*, test tube; *I V N*, intravenous needle; *I S C*, intraspinal connections; *I S N*, intraspinal needle.

Place the apparatus in an ice box over night to allow the serum to separate. The blood clot will adhere to one side of the tube, and the clear serum can be gently and gradually poured over into the intraspinal arm by tipping the apparatus. The amount and proportion of serum and salt solution in the intraspinal side of the tube can be varied as desired from 100 per cent. serum to 50 per cent. serum or less. Mix the serum with the salt solution and place the apparatus in a water bath, heating to 56 C. (132.8 F.) for half an hour. Cool to the temperature of the body, and the salvarsanized serum is now ready for use.

Insert the intraspinal needle, withdraw the spinal fluid, and then being sure that all air is out of the intraspinal tubing, connect the needle with the apparatus and allow the serum to enter the spinal canal. Gravity is the only pressure needed as a rule, or pressure may be applied through the upper outlet of the inverted U tube.

The advantages of this apparatus are:

1. The entire apparatus is sterilized at once and remains sterile throughout the procedure.

2. The blood, serum and salt solution do not come in contact with unfiltered air at any time.

3. The apparatus has no rubber stoppers or sliding glass tube.

4. The apparatus is not complicated and is easy to operate.

506 Metropolitan Building.

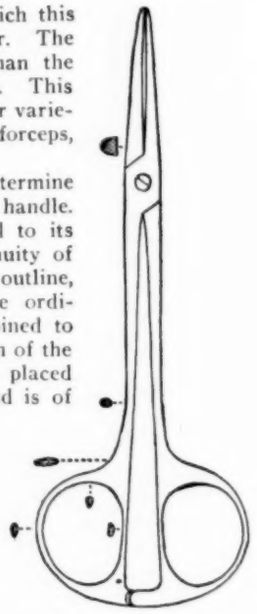
TIME-SAVING FORCEPS*

CARLETON DEDERER, M.D., LOS ANGELES

Elimination of waste time alone has been the deciding factor in many an operation. Much time is lost in operations by the accidental catching and tangling of ligatures in the handles of artery forceps.

Here is a pair of forceps in which this troublesome accident cannot occur. The portions of these forceps other than the handle have no distinctive design. This form of handle is applicable to other varieties of forceps, such as Kocher forceps, Kelly forceps and others.

There are two features which determine the character of the outline of the handle. Each ring of the handle is joined to its corresponding lever arm by continuity of structure, having a cantilever outline, thereby occluding the acute angle ordinarily found when each ring is joined to its lever arm. The snapping portion of the forceps which holds them shut is placed at the extremity of the forceps, and is of such shape that it gives to the end of the forceps at the handle a semielliptic outline.



Time-saving forceps, showing cross-sections.

This sample, which I have had made, fulfils all the mechanical requirements, except that it is a little too heavy, owing to the failure of the instrument maker to adhere to the cross-sections as laid down in the working drawing. All instruments for handling tissues should be as light as is compatible with their intended use.

If this design of forceps meets the approval of the profession, there is no reason why they could not be made in large quantities as cheaply as those of the ordinary design.

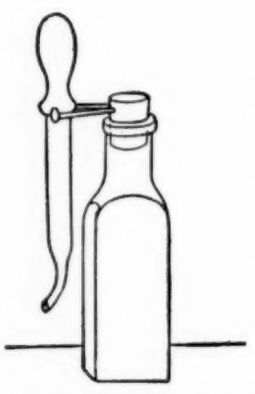
602 Hollingsworth Building.

MEDICINE PIPET HOLDER

H. S. REYNOLDS, M.D., NEW HAVEN, CONN.

Various holders and bottle attachments for medicine pipets have been devised, but are seldom available when needed.

An efficient holder can be improvised in about ten seconds' time by the use of two common brass pins. The pins are inserted deeply into the cork, parallel with each other and nearly in contact. They will possess spring enough to hold securely an ordinary medicine pipet as shown in the accompanying illustration.



Medicine pipet holder made of two pins.

* Read before the Los Angeles County Medical Society, Feb. 4, 1915.

Race Suicide and Politics.—"As long as more than 600,000 infants die in this country each year from easily preventable causes no woman may be blamed if she hesitates to enter on the duties of motherhood," asserted C. W. Stiles before the Knife and Fork Club of Kansas City in a recent address on hookworm and the other diseases of the South. As a remedy he said further, "When their husbands take the public health service out of peanut politics and make it reasonably certain that every healthy child born has an opportunity to live and thrive, then the women may be called to account about race suicide."

Special Article

PRACTICAL PHARMACOLOGY*

(*Continued from page 1242*)

XV

LOCAL ANESTHETICS

COCAIN

Cocain is the only alkaloid of therapeutic importance obtained from coca. There are, however, other bases present in the leaf which probably add materially to its action, but which have not been studied.

The use of coca by the natives of Peru was mentioned by Pizarro in the sixteenth century, and at a very early date remarkable tales were told of the feats of physical endurance which the natives performed while using it. These stories were often considered as mere travelers' tales, but they have been amply verified, and the following interesting account of the endurance of coca-chewers is given by Lloyd of Cornell University:

> We started across the Paramo, as the lofty summit of the Andes above the timber line is called. On this trip the dozen Indian porters who carried our cargoes all consumed coca unceasingly while on the march. After eating a simple breakfast of ground corn porridge, they would start with their heavy packs, weighing from 75 to 100 pounds, strapped to their backs. All day long they traveled at a rapid gait, over steep mountain spurs and across mucky swamps at an altitude that, to us, without any load whatever, was most exhausting. On these trips the Indians neither rested anywhere nor ate at noon, but incessantly sucked their wads of coca throughout the entire day.

The first investigation of cocain worth mentioning appears to have been made in 1860, when Woehler isolated cocain. The local anesthetic action of coca when chewed with ashes (as the natives use it) was observed a little later, and was shown to be due to cocain. Nothing came of these observations, however, until Koller, now of New York, introduced cocain into medical practice in 1884. For some years it was very expensive and its use was limited to ophthalmic practice. Its costliness, its toxicity and other disadvantages have served as a stimulus in the search for substitutes, and many synthetic preparations have been introduced, but none of these has attained the popularity of cocain, though some have certain special fields of usefulness.

While cocain is used therapeutically almost exclusively as an anesthetic, its action on the central nervous system is of importance because of the frequency with which poisoning occurs through its abuse and through accident or overdosage.

Cocain stimulates the centers in the same general order in which they are depressed by morphin, but the motor areas, which are not depressed by morphin, are actively stimulated by cocain; this results in circus movements in some animals. The stimulation is followed by depression of the same areas, but the stimulation and depression are not at all uniform, so that one usually observes evidences of mixed stimulation and depression of the various centers during cocain poisoning.

* This is the fifteenth of a series of articles on useful drugs—on practical pharmacology for the general practitioner. As soon as completed, these articles, elaborated by additional subjects, will be published in book form.

Cocain causes a notable rise in the temperature, supposedly through its action on the heat-regulating mechanism.

The respiratory center in the medulla is stimulated, causing an increased rate, with little change in the depth at first. Later the stimulation gives place to depression, and with large doses the respiration becomes shallow, while the rate may be increased still further. If convulsions result, the respiration is arrested, and, as after strychnin convulsions, may fail to be reinstated, or there may be a gradual respiratory failure, with Cheyne-Stokes respiration and progressive slowing and diminished volume until death.

The vasomotor centers are stimulated by cocain, causing a great rise in blood-pressure, which may be so extreme as to demand treatment after large doses. It should be noted that this excessive rise in the blood-pressure is quite apart from the local vasoconstrictor actions which follow the local application of the drug, for in the latter case it is present in very much greater concentration than it can be after the absorption of non-fatal doses into the general circulation.

In discussing the peripheral actions of cocain we must distinguish between the local effects of relatively large amounts—that is, where the drug is in relatively high concentration in small areas—and the effects following the systemic application. The latter will be discussed first. Cocain stimulates the sympathetic nerve-endings after its systemic application, in which case the amount which comes in contact with the nerve-endings is insufficient to cause paralysis. The degree of the stimulation of the nerve-endings differs widely in different parts of the body. The accelerator nerve of the heart is stimulated prominently, causing an increase in the heart-rate; this tends to augment the rise of blood-pressure, owing to stimulation of the vasomotor centers.

The sympathetic endings in the pupil are stimulated, causing dilatation of the pupil; this is much more pronounced when the cocain is dropped into the eye.

The action of cocain on the sympathetic endings appears to render them more excitable to normal or other stimuli, even when the dose is insufficient to induce any visible effect alone. Thus if an amount of cocain equal to 0.3 mg. (1/200 grain) per kilogram of body weight be injected into the veins of a dog it will cause no rise in the blood-pressure, but if a dose of epinephrin, which is without effect on the blood-pressure of a normal dog, be injected intravenously immediately after the administration of the cocain, the blood-pressure rises sharply, because the vasoconstrictor endings are now more excitable than normally. The action of cocain is manifested on the pupil and probably elsewhere in the body in the same way. After the systemic administration of cocain the effects on the sympathetic endings elsewhere in the body are of minor importance, probably because the vasoconstrictor action, which results in a diminished supply of blood to the part, masks the action on the other sympathetic endings.

Cocain increases the capacity for muscular work through its lessening the sense of fatigue after its systemic application, but since it depresses the nerves with which it comes into contact in *sufficient concentration*, cocain injected directly into the muscle to be tested diminishes its capacity for work.

The local application of cocain to mucous membrances causes constriction of the vessels, resulting in blanching, presenting a bloodless field for operations and causing stoppage of the secretion of the mucous glands through the interruption of the circulation.

This local vasoconstriction is useful in several ways. In addition to presenting a bloodless field, the interruption of the circulation delays the absorption of the cocain into the general circulation, thus intensifying and prolonging the local anesthetic action, and since the intensity of systemic action depends partly on the concentration in which the cocain enters the circulation, the slow absorption lessens this action while permitting the elimination of a part of the drug. Intense local vasoconstriction may follow the use of concentrated solutions, and the prolonged local action occasionally causes gangrene. This can be avoided by using dilute solutions, but their action is so slow and weak that the same object is attained, better by using moderately dilute solutions of cocain with enough epinephrin to cause a sufficient degree of vasoconstriction.

When cocain is applied to mucous membranes or injected subcutaneously the nerve-endings are paralyzed, the sensory before the motor. If the solutions are applied to nerve-trunks these are also paralyzed, and here, too, the sensory fibers are paralyzed before the motor. The nerve-endings and trunks are not paralyzed when cocain is taken internally or injected intravenously, because it does not reach those structures in sufficient concentration. An apparent exception to this rule has been demonstrated for the serous surface of the intestine of the dog; pinching the intestine does not cause pain after the subcutaneous injection of a moderate dose of cocain.

The difference in the degree of concentration in which the drug reaches the nerve-endings of trunks after systemic and local application is appreciated when one remembers that the amount used for local application to an extremely small part of the body is equal to that which can be injected safely into the entire body, and which is probably distributed through a large portion of it.

When cocain is applied to the tongue it abolishes the sense of taste for bitter substances more readily than those for sweet and sour, the taste for salt being unaffected. Yerba santa affects the sense of taste in the same way. The sense of smell is abolished by the local application of cocain to the nasal mucous membrane.

Cocain is absorbed rapidly from the gastro-intestinal tract and from the subcutaneous tissues when the local vasoconstriction has passed away, or if the solution injected is too dilute to cause this constriction of the vessels.

It is probably destroyed in the body in part, but a part is excreted in the urine unchanged, the elimination being slow after poisonous doses have been taken.

Acute fatal poisoning by cocain is comparatively rare, considering its wide-spread use. The fatal dose is probably about 1 gm (15 grains), either by mouth or subcutaneous injection, but a much smaller amount may be fatal when it is injected directly into the spinal canal, because of the facility with which it may ascend to the medulla and paralyze the respiratory center. Death is reported to have followed the injection of 0.02 gm. (½ grain) in this way in each of two cases.

Severe symptoms of poisoning may follow very much less than the average fatal dose.

The habitual use of cocain is common, and extreme measures have been adopted in some states, notably New York, in the effort to abolish the illegal traffic in the drug. The sudden withdrawal of cocain from one who has been accustomed to its use by subcutaneous injection causes such severe suffering and dangerous collapse that special provision must be made for the care of the habitués when stringent and effective laws are passed abolishing the sale of the drug except for legitimate therapeutic uses. Those who use it as a snuff are said to withstand the sudden withdrawal without serious consequences.

The treatment of cocain addiction requires special measures and does not demand discussion here. The treatment of acute cocain poisoning is similar in general to that of poisoning by other alkaloids—removal from the stomach, if possible, precipitation, elimination and administration of physiologic antagonists; there is no specific remedy for the drug when it has entered the circulation. Excessively high blood-pressure may require relief by means of the nitrates, 3 minims being inhaled from a handkerchief. Hydrated chloral or chloroform may be required to control the excitement and convulsions, but ether is probably preferable, because it is not so dangerously depressant, and its action can be controlled to accord with the different stages of cocain action better than hydrated chloral or chloroform.

Artificial respiration should be employed if there is any sign of respiratory failure.

Solutions of cocain are decomposed on prolonged boiling with the liberation of benzoic acid and methyl alcohol, but they may be sterilized with insignificant loss by boiling for a short time or by maintaining them at a temperature of 80 C. for an hour on each of two successive days. A solution recently prepared with proper caution with sterile salt solution is practically sterile. The solution decomposes on standing, and only freshly prepared solutions should be used.

THERAPEUTIC USES

The therapeutic uses of cocain depend almost exclusively on its anesthetic and astringent actions when applied to mucous surfaces, to painful ulcers, or when injected subcutaneously, and it is obvious that it is capable of affording relief in a wide range of conditions which it is unnecessary to discuss in detail.

When applied to mucous surfaces it causes anesthesia and intense blanching, due to vasoconstriction; hence it is applied to the conjunctiva, the nose, throat, urethra and other surfaces for the relief of pain, to facilitate examination or to allay congestion. It must be remembered that absorption takes place readily from any of these surfaces after the primary blanching, and sometimes immediately after the application. Death has followed the injection of a small amount of cocain into the urethra, though its injection into the bladder appears to be less dangerous, provided that dilute solutions are used.

The application of cocain in dilute solution or powder to the nasal mucous membrane relieves the congestion and facilitates the passage of instruments, but epinephrin is probably preferable. Cocain may be applied to ulcers when swallowing is painful, as in laryngeal tuberculosis, or it may be injected into the sheath of the laryngeal nerve, though this is not commonly advisable. Sometimes cocain is applied to itching piles and to the vulva, but it is better to employ phenol ointment, which does not give rise to a habit in such chronic conditions, for it must be remembered that absorption and systemic effects may follow the use of cocain in any of these conditions. The application of strong solutions to the gums and to carious teeth is said to be especially dangerous, and at most very small amounts of weak solutions should be used for that purpose.

Cocain is sometimes used to facilitate the swallowing of the stomach-tube, and to allay nausea of local origin in the stomach, but it is not advised for either of these purposes, because of the difficulty of applying enough of the solution to cause diminished sensation over such large surfaces without using toxic doses. It will be of very little use in allaying nausea of central origin, though it may diminish the stimulus from the stomach which acts on a hyperexcitable center.

Cocain is useful in securing a bloodless field in cutting operations on mucous membranes and operations of small area, but it is obviously unsuited for this purpose in major operations involving large areas. It is also especially effective in controlling capillary hemorrhage.

It is frequently used as a mydriatic because it induces insensibility to pain. The mydriasis is not so complete as with atropin, but the cocain is said to enhance the action of other mydriatic alkaloids, and a small amount of atropin may be used at the same time if desired. Cocain does not cause paralysis of accommodation or the loss of reaction to light. The action is induced mainly through the local *stimulant* action on the sympathetic endings, but in part through the central action when absorption occurs. It is remarkable that atropin and cocain, which are so closely related chemically, should produce mydriasis through opposite kinds of action on different structures.

Cocain is sometimes injected intraspinally to produce insensibility to pain in the lower parts of the body, but while those who have become expert in the technic of its use in this way report satisfactory results, it is not suited for general practice because of the grave dangers which it involves.

Attention has been called to the fact that shock may result from severe and extensive injuries to nerves during surgical operations under ether or chloroform. Cocain causes complete paralysis of the nerve-trunks if applied to them or to the nerve-endings, and thus prevents the passage of impulses through the nerves. In this way the danger of shock during operation may be lessened, even when it is necessary to combine the local anesthetic action of cocain with a general anesthetic, such as ether.

Wine of coca has been used as a general tonic, but there seems to be no indication for the use of such a preparation. Of course, any wine of coca must contain cocain, otherwise it is not wine of coca.

DOSAGE

The dose of cocain hydrochlorid for internal administration is said to be 0.03 gm. (½ grain). This, however, must be considered rather as a guide to the limits of safe administration than as any indication of the amount required for systemic effects, for even when taken orally for the relief of pain in gastric ulcer or to allay nausea and vomiting, it is used for its local action, and a systemic effect is undesired. It stimulates the psychic and other centers, including that of respiration, but we have safer and better drugs for

those purposes. On the contrary, when it is applied locally or taken internally it is desirable to delay absorption so far as possible.[1]

The amount of cocain administered at any one time should be limited to 0.06 gm. (1 grain), unless its absorption can be prevented.

It is used in solution containing from 1 to 2 per cent. for the relief of pain and in 4 per cent. solution where it is necessary to induce complete anesthesia, as in cutting operations. Anesthesia of the mucous membrane and other parts of the eye which are subjected to cutting may be induced within ten minutes; this lasts about fifteen minutes and then disappears, so that the time allowed for operation is brief.

It is difficult to produce anesthesia of the nose, throat and larynx, and strong solutions are sometimes employed, but these are not devoid of danger. In laboratory experiments on dogs it was found to be impossible to produce complete anesthesia of the esophagus by applying dilute solutions, and when stronger solutions were used absorption occurred to such an extent that toxic symptoms invariably resulted. One difficulty encountered was due to the presence of an abundant secretion of mucus, which interfered with the direct application of the cocain. This difficulty may be overcome in part by the application of atropin in suitable cases.

Solutions varying from 0.5 to 4 per cent. are used for subcutaneous injection; but Schleich suggested the use of solutions of different strength (and containing morphin, without sufficient reason) for the infiltration method. This consists in injecting a relatively large amount—up to 200 c.c. (6 fluidounces)—of a solution of 1:10,000 in physiologic saline through a fine needle and permitting it to permeate the tissues about the region to be operated on. Relatively smaller amounts of solutions of 1:1,000 may be used in the same way. The pressure of the solution on the nerves assists in the anesthetic action. The solution is injected into—not beneath—the skin at first, and then into the underlying tissues successively. This method is painful when inflammation exists, and in such cases it is preferable to inject the solution around the trunk of the nerve which supplies the region to be incised, thus blocking impulses. It would be preferable to inject the solution directly into the sheath of the nerve-trunk, but it is difficult to do this without first exposing the nerve; hence it is better to inject the solution so that it will lie around the nerve-trunk.

Solutions containing from 0.005 to 0.03 gm. (from 1/12 to ½ grain) injected into the lumbar subdural space produce loss of perception of pain in the parts supplied by the afferent nerves of that region, while the sense of touch and the capacity for voluntary movement are retained. With large doses there is a total paralysis of the regions involved soon after the pain sensation is lost.

It is essential that the solution be prevented from penetrating along the spinal canal to the medulla, for should even a small amount of cocain reach the medulla death from paralysis of the respiratory center may result.

Aside from the danger of systemic effects with this method, there is also the disadvantage that muscular relaxation does not occur.

1. It is possible that the systemic action of cocain might be useful in enhancing the effect of epinephrin in shock, but the technic of its use for this purpose has not been studied.

The intravenous injection of cocain has been recommended by Bier for local anesthesia in small areas. It is necessary to apply tourniquets above and below the seat of injection to prevent the passage of the cocain into the general circulation; the difficulties of the method of securing local anesthesia are evident, and it has the disadvantage of all intravenous injections. It is distinctly contra-indicated for general practice.

MATERIA MEDICA

Cocaina.—Cocain, U. S. P.

An alkaloid obtained from several varieties of coca, employed in medicine usually in the form of:

Cocainae Hydrochloridum.—Cocain Hydrochlorid, U. S. P.

The neutral hydrochlorid of the alkaloid cocain occurs as colorless crystals or a white crystalline powder, permanent in air, odorless, having a slightly bitter taste, and producing on the tongue a tickling sensation followed by numbness of several minutes' duration. Cocain hydrochlorid is very soluble (1:0.4) in water and freely soluble (1:2.6) in alcohol. It is incompatible with alkalies, sodium borate and zinc sulphate. It decomposes on standing even in sterile solution.

COCAIN SUBSTITUTES

The toxicity of cocain, together with minor disadvantages, such as its instability when boiled or allowed to stand, has served as a constant stimulus in the search for suitable substitutes; among the more useful of the agents which this search has brought forth are novocain, stovain, alypin, tropacocain, orthoform-new, and others which are described in New and Non-Official Remedies.

Novocain is less toxic than cocain, but the anesthesia which it induces is more fleeting; this may be overcome by the injection of epinephrin with the novocain. Novocain is not irritant and is gaining in popularity for very short operations, especially among ophthalmologists. Stovain is about equal to cocain in anesthetic activity, but it causes dilatation of the vessels, and where a bloodless field or the astringent action of cocain is required it must be combined with epinephrin. Alypin is closely related to stovain, over which it has no obvious advantage. Solutions of these drugs and of tropacocain may be boiled without causing decomposition, but this does not constitute any great advantage over cocain. Orthoform-new resembles cocain in its anesthetic actions, but it is insoluble; hence it is suited mainly for application to painful ulcers; in fact, it is sometimes used for diagnostic purposes in cases of suspected gastric ulcer. When relief is afforded in such cases it is taken as evidence that the pain is due to ulcer.

OTHER MEASURES FOR INDUCING LOCAL ANESTHESIA

Magnesium sulphate has been used intraspinally for the production of anesthesia, but it is not recommended.

The injection of pure water under sufficient pressure causes anesthesia of the tissues, but it is too painful for general use.

Sensory endings in the skin may become depressed as the result of overstimulation, or irritation, by drugs, such as chloroform, which are often used in the form of liniments, and diminished sensation in the region over an abscess before it bursts is probably the result of overstimulation.

Protracted immersion of a painful part in warm water lessens its sensibility to pain, and the application of heat results in vasodilatation, which is later followed by vasoconstriction when the part is exposed to cold. The cells of tissues imbibe water during immersion and this lessens the sensitiveness to pain; such protracted immersion is especially useful in allaying itching.

Anesthesia can be produced by freezing, either by immersion in a freezing mixture of salt and ice, or, more conveniently, by spraying with a volatile substance, such as ethyl chlorid or rigolene (light gasoline).

With care the freezing with ethyl chlorid spray may be accomplished with little pain, but it is suitable only for small areas and for short operations, such as opening abscesses.

Menthol is applied externally for the relief of neuralgia and certain forms of headache, the cones or pencils affording a convenient means of application. It is sometimes inhaled for the relief of rhinitis and sore throat, or it may be dissolved in 100 parts of liquid petrolatum and applied locally. An ointment containing from 1 to 2 per cent. of menthol may be used for the relief of itching.

It is sometimes used internally for the relief of gastric pain, but it is not especially effective.

The dose is 0.06 gm. (1 grain).

Pusey of Chicago introduced solid carbon dioxid into therapeutics in 1907. When liquid carbon dioxid is allowed to escape from a cylinder into a cone it forms a snow that may be collected and formed into pencils that must be handled cautiously. When it is pressed for a few seconds against the skin the latter is frozen, and this is followed by vesication, but not by necrosis.

Pencils or crayons of carbon dioxid snow are used for the removal of capillary nevi, warts and moles, and in the treatment of rodent ulcer, lupus vulgaris and in many other conditions.

Its employment requires a special technic that does not require further discussion here.

Phenol is actively anesthetic, and the ointment of phenol is especially useful for the relief of painful ulcers. The application of an aqueous solution to parts in which the circulation is impaired is attended with serious danger of gangrene, and numerous instances of the loss of fingers and toes from this cause might be cited. The official phenol ointment does not have this disadvantage.

Eriodictyon (yerba santa) abolishes the sense of taste for bitter substances; hence it is used as a sirup to mask the taste of quinin and other bitter substances.

(*To be continued*)

Securing Better Birth Registration.—Miss Julia C. Lathrop, chief of the Children's Bureau at Washington, has appealed to the Federation of Women's Clubs in Minnesota for improved birth registration. A test of the thoroughness of registration has been suggested consisting in taking the names of 100 "sure-enough, live babies" and then looking up the official records of birth registration. In Duluth this test was applied and it was found that one baby in six lacked official record, leaving it open to all sorts of legal troubles and questions of citizenship, etc., later. Sixteen counties in Minnesota are now organizing to make this test through the public health committee of the federation, and organizations have been completed in Blue Earth, Polk, Steele, Crow Wing and Mower counties. All women are appealed to for aid.

Special Article

TYPHOID IN THE LARGE CITIES OF THE UNITED STATES IN 1914

For two years past The Journal has published statistics showing the mortality from typhoid fever in those cities of the United States having over 100,000 population.[1] There were fifty such cities in 1910, and by 1914 ten others (Hartford, Conn., San Antonio and Dallas, Texas, Salt Lake City, Utah, Trenton and Camden, N. J., Springfield and New Bedford, Mass., Tacoma, Wash., and Reading, Pa.) had been added to the list, making a total of sixty cities considered in the present summary. One of these (Hartford, Conn.) was included in our tables for 1912 and 1913. The estimated increase of population has in a few cases caused a regrouping.[2]

TABLE 1.—DEATH RATES FROM TYPHOID IN CITIES OF GROUP 1 (OVER 500,000 POPULATION)

	Deaths from Typhoid per 100,000 Population		Average	Average
	1914	1913	1911-1914	1906-1910
New York	6.2	6.9	8.5	13.5
Chicago	7.1	10.4	8.9	15.8
Philadelphia	7.4	15.6	12.4	41.7
Cleveland	8.3	13.4	10.5	15.7
Boston	9.1	8.4	8.7	16.0
St. Louis	11.1	16.8	13.4	14.7
Detroit	13.0	27.2	19.4	21.1
Pittsburgh	13.8	18.0	17.3	65.0
Baltimore	22.4	23.4	24.2	35.1

The excellent showing made by the city of New York in 1913 has been further improved on, and the rate for 1914 (6.2) falls below the low rate of the previous year, and again makes a new low typhoid record. The careful typhoid studies carried out in New York are evidently bearing fruit. The prohibition of bathing in the polluted water surrounding Manhattan Island is unquestionably a justifiable measure, and has probably prevented some typhoid deaths. It is, however, in the opinion of some sanitary authorities the effective control of the milk supply practiced in New York that is more largely responsible than any other factor for the remarkable reduction in typhoid fever in that city. Whatever the cause, it should not escape notice that in the largest city in the country the average death rate for 1913 and 1914 was less than one-half the average for the years 1906-1910.

Chicago, also, achieves a new low record, and probably for much the same reasons as New York. There is no doubt that, wherever careful watch is kept of the development of typhoid cases, budding epidemics may be checked and sources of infection discovered and eliminated. In Chicago, for example, it is stated that an instance of dual water connection was disclosed through the investigation of a small group of cases among the employees in a building adjacent to

1. Typhoid in the Large Cities of the United States, special article, The Journal A. M. A., May 31, 1913, p. 1702; May 9, 1914, p. 1473.

2. The number of typhoid deaths has been sent us by the local officer of health, and the rates have been calculated on the basis of population estimates made according to the method of the U. S. Census Bureau. It may perhaps be noted that the figures kindly furnished us by the municipal officials include the deaths of nonresidents as well as residents occurring within the city limits. In some instances this undoubtedly gives an exaggerated impression of the amount of typhoid fever in a community, but at present statisticians are agreed that "the attempt to eliminate the deaths of nonresidents would often result in an understatement of the true mortality" (Bureau of the Census, Mortality Statistics, 1912, p. 13). The rates as given in the present article have been recalculated on the basis of midyear populations. We have also made some other corrections from additional data furnished us. In practically all cases the differences are fractional and do not materially influence the conclusions previously drawn.

the Chicago River. Late in the year a disproportionately large number of cases occurred in the district served by a particular pumping station of the public water supply, the wells of which were being repaired. As in New York, so in Chicago, the general pasteurization of milk has probably played a large part in the great typhoid reduction of the past five years.

Perhaps the most astonishing improvement in this group is that of Philadelphia, which from being one of the most dangerous cities in the United States, so far as typhoid is concerned, has become one of the safest. As is well known, the inauguration of water filtration is largely responsible for this. Recently the extension of the filtration system has still further bettered the situation. A new sedimentation basin in construction at the Torresdale filters will throw an additional safeguard around the filtration process. The city authorities have recently drawn attention to a significant difference in distribution of typhoid fever within the filtered water area. In the South Philadelphia district the number of cases of typhoid fever has averaged about twice as high in proportion to the population as in other sections of the city. This is attributed to the lack of sewerage facilities in that district, which is said to contain an unusually "concentrated area of unconnected, unsewered houses." If this section of the city can be put on a par with the rest and some other projected forms carried out, New York and Chicago will have to look to their laurels.

Detroit for the first time is included with the cities of over 500,000 population. In our previous summaries we have called attention to the excessively high typhoid rate in Detroit and have pointed out the probable connection with the public water supply. This view has been accepted reluctantly by some citizens of Detroit, although the opinion expressed in our articles has been confirmed by well-known experts like McLaughlin and Phelps after an independent examination. We still read in the Detroit papers, "The outstanding fact is that no great calamity has yet befallen." So might an unimaginative Damocles have argued to himself at the banquet table long ago in Syracuse. Fortunately the Detroit officials themselves have not been altogether content with the water situation and have taken the precaution of treating the water with hypochlorite of lime. According to one statement, the dose of hypochlorite was increased from 5 pounds per million gallons "administered intermittently and ineffectively" in 1913 to from 6 to 8 pounds per million gallons, "administered regularly" in 1914. If this was the case, it is tempting to conclude that the lowering of the typhoid rate in Detroit in 1914 was due in part at least to the chemical disinfection of its water supply. At all events, water can hardly be ruled out impatiently as an impossible source of typhoid infection in Detroit, past, present or future. A filtration plant is being discussed by some officials. One argument against water purification, said to have been advanced, that it "would cost $2,000,000 to filter the water while it would cost only $50 to kill the true source—the infected cow," may be mentioned here for the edification of sanitarians.

Cleveland, where the water supply has been carefully chlorinated under expert supervision throughout the year, shows a gratifying decrease over 1913. Boston is the only city in the group to show a higher rate in 1914 than in 1913, the increase apparently being due in part to a milk-borne epidemic in Jamaica Plain. Baltimore, in spite of local difficulties, continues to reduce its typhoid rate, and for the third year in succession makes a new low record. But why should Baltimore be content with always bringing up the rear? Pittsburgh and St. Louis have both cut well under their 1913 rates. St. Louis had a little flurry over its water supply in the summer, but the alarm then expressed over the reported finding of colon bacilli in the tap water was not followed by any well-defined water-borne epidemic.

TABLE 2.—DEATH RATES FROM TYPHOID IN CITIES OF GROUP 2 (300,000 TO 500,000 POPULATION)

	Deaths from Typhoid per 100,000 Population		Average	Average
	1914	1913	1911-1914	1906-1910
Seattle	4.6	4.8	6.5	25.2
Cincinnati	6.0	6.3	7.9	30.1
Newark, N. J.	6.3	7.8	7.8	14.6
Milwaukee	7.9	11.1	15.8	27.0
Los Angeles	8.0	13.3	12.0	19.0
Minneapolis	11.0	12.3	11.5	32.1
Washington	12.7	16.3	18.5	36.7
San Francisco	12.9	16.5	14.7	27.3
Buffalo	15.8	15.1	16.8	22.8
New Orleans	21.5	16.8	20.7	35.6

Group 2, like Group 1, shows an almost uniform improvement, Buffalo and New Orleans being the only cities in which the 1914 rate has not dropped lower than the 1913. In Buffalo the increase is slight, but in New Orleans the 1914 typhoid death rate rose above the four-year average. Seattle, now included in Group 2, leads the group with a very low rate, as for the previous two years it had led Group 3. Newark, Milwaukee, Los Angeles, Minneapolis, Washington and San Francisco all made new low records, and Cincinnati almost equals (6.0) her banner year of 1910 (5.7). Washington makes a fine showing, and like New York, Chicago, Philadelphia, Richmond and some other cities, furnishes an excellent example of the results that may be obtained through well-directed typhoid studies. Other cities with a large negro population and high summer temperature are invited to take notice. The average Washington rate for 1906-1910 was higher than the Baltimore rate; in 1914 it was little more than half the Baltimore figure. Milwaukee

TABLE 3.—DEATH RATES FROM TYPHOID IN CITIES OF GROUP 3 (200,000 TO 300,000 POPULATION)

	Deaths from Typhoid per 100,000 Population		Average	Average
	1914	1913	1911-1914	1906-1910
Portland, Ore.	6.6	7.7	12.2	23.2
Jersey City	6.7	10.4	7.7	12.6
Rochester, N. Y.	10.3	10.1	10.6	12.8
Denver	10.5	12.5	13.3	37.5
Providence, R. I.	10.5	9.9	10.7	14.3
St. Paul	10.5	8.2	9.7	18.3
Columbus, Ohio	13.1	19.0	16.5	40.0
Kansas City, Mo.	16.5	21.3	18.5	35.6
Louisville, Ky.	20.6	21.7	21.7	52.7
Indianapolis	21.8	24.3	22.6	30.4

affords an impressive illustration of the value of hypochlorite treatment of infected water supplies; the 1911-1912 average was 22.2, while the 1913-1914 average was only 9.5, the lowest in forty years. The local statisticians have a fair field for reckoning the cost of the bleaching powder needed to save a human life, to say nothing of the hundreds of typhoid cases that have been prevented. The new low record in Los Angeles may be connected with the partial utilization during the year of the new water supply from the Owens River aqueduct. If so, further improvement in that city may be expected from the more general distribution of water from this new source.

The cities in Group 3 show relatively little change from the 1913 rates. Kansas City makes a somewhat better showing for 1914 than for 1913, but does not get back to the rate for 1912 (12.7). Denver shows a good decrease. Columbus, now in this group, betters to some extent its 1911 figures. The somewhat increased rate in St. Paul may perhaps be due to an "accident" or "blunder" on October 20, by which the deadly dual water connection led to a brief water contamination in the neighborhood of the Union Stockyards. Whatever the cause, the rate was the highest in four years. Louisville continues slowly to lower its typhoid rate; intensive studies would probably accelerate the process. For the second year Indianapolis brings up the end of the list. Do the residents of this city realize that typhoid rates above 20 are becoming almost as rare and inexcusable as rates above 40 were ten years ago? Indianapolis' average for 1911-1914 is not creditable.

TABLE 4.—DEATH RATES FROM TYPHOID IN CITIES OF GROUP 4 (125,000 TO 200,000 POPULATION)

	Deaths from Typhoid per 100,000 Population 1914	1913	Average 1911-1914	Average 1906-1910
Worcester, Mass.*..	3.7	5.7	4.8	11.8
Omaha	5.9	6.8	17.7	40.7
Oakland, Calif.....	6.4	9.0	9.2	21.5
Paterson, N. J.....	8.1	6.7	10.1	19.3
Scranton, Pa.....	9.1	6.4	9.1	31.5
Fall River, Mass...	10.3	10.4	13.7	13.5
Syracuse, N. Y....	10.6	12.9	13.9	15.6
Spokane, Wash.....	12.7	7.1	18.7	50.3
Richmond, Va.....	13.1	19.1	16.4	34.0
New Haven, Conn.	13.8	11.2	18.2	30.8
Toledo, Ohio.....	36.3	41.5	33.2	37.5
Atlanta, Ga.....	38.9	16.5	36.4	58.4
Birmingham, Ala...	40.2	35.8	...	...
Memphis, Tenn.†...	...	29.9	...	35.3

* We regret that our figures for the Worcester typhoid mortality during 1912 and 1913 were at fault. The data on which we based our statements were furnished us by a Massachusetts health official, but from records of the local authorities it appears that these were not correct. We take pleasure in calling attention to Worcester's excellent record for the years 1911-1913.

† In spite of repeated efforts we have not been able to secure the number of deaths from typhoid fever during 1914 in Memphis.

Group 4, like Group 3, affords a record mainly of steady progress. Worcester, Omaha, Oakland, Syracuse and Richmond make new low records, and only Toledo and Atlanta exceed the 1911-1914 average. Atlanta, however, shows a really alarming increase compared with the preceding year.

Toledo maintains its mysteriously high rate. All published reports of the Toledo public water supply are highly favorable; the purification plant is properly constructed and carefully operated, and the bacterial efficiency is apparently unusually high. At the same time it must not be forgotten that the raw water treated at Toledo is badly contaminated and that its adequate purification calls for unremitting vigilance. There is a tendency to place the responsibility for the high Toledo rate on surface wells, but if surface wells are at fault to the extent indicated by the mortality records, the conditions in this respect in Toledo must be quite different from, and much worse, than those in other Northern cities. A justifiable uneasiness is felt in Toledo over this situation, and investigation should be pushed until the cause of the excessive typhoid prevalence is discovered and remedied. Birmingham suffers from much too high a typhoid rate for any progressive city. There is some reason for believing that the water supply—controlled by a private company—is not beyond reproach. An attempt has been made by the city to declare void the franchise of the water company on the ground that the water furnished is impure. The establishment of a municipal waterworks has also been discussed. Richmond shows a most gratifying typhoid decrease and is quite in the same class with Washington. The success of these two cities in reducing typhoid fever should prove a stimulus to Nashville, Birmingham and Atlanta, now among the greatest sufferers in the United States from this preventable disease. Scranton shows a somewhat increased, but by no means alarmingly high, rate; the city authorities are evidently not altogether at ease about the water supply, judging from a warning, issued in November, to boil the water. Omaha has a splendidly low rate (5.9) to follow so closely on the epidemic of 1911 (44.9).

TABLE 5.—DEATH RATES FROM TYPHOID IN CITIES OF GROUP 5 (100,000 TO 125,000 POPULATION)

	Deaths from Typhoid per 100,000 Population 1914	1913	Average 1911-1914	Average 1906-1910
Cambridge, Mass...	1.8	9.1	4.6	9.8
Bridgeport, Conn..	3.4	5.3	4.9	10.3
Camden, N. J.....	5.8	9.9	3.9	...
Tacoma, Wash.....	6.7	10.1	11.6	...
Dayton, Ohio.....	9.2	15.0	15.1	22.5
New Bedford, Mass.	9.8	8.3	14.3	16.1
Lowell, Mass.....	9.8	9.9	8.8	13.9
Salt Lake City....	11.8	15.1	14.7	...
Trenton, N. J.....	14.9	21.0	26.3	...
Albany, N. Y.....	17.5	27.3	20.1	17.4
Hartford, Conn....	17.7	11.4	15.3	19.0
San Antonio, Tex.	18.2	20.7	32.1	...
Springfield, Mass...	21.8	20.4	19.3	...
Grand Rapids, Mich.	26.7	16.5	25.7	29.7
Reading, Pa.....	28.0	58.0	35.9	42.0
Dallas, Tex.....	35.2	...	...	...
Nashville, Tenn....	47.3	36.0	41.5	61.2

Nine cities (San Antonio and Dallas, Texas, Salt Lake City, Utah, Trenton and Camden, N. J., Springfield and New Bedford, Mass., Tacoma, Wash., and Reading, Pa.) are included for the first time in Group 5. For the most part they do not fall below the average of the group, though Springfield, Reading and Dallas do not make a very meritorious showing. Eleven out of sixteen cities in this group had a lower rate in 1914 than in 1913. Cambridge establishes the unequaled record of 1.8, the best yet achieved by any large American city, except Camden, which reported no typhoid deaths in 1911 and 1912. Albany, after the flood-caused outbreak of 1913, returns in 1914 to what seems to be its "normal" rate, but a rate which, nevertheless, is nearly three times as high as that in New York City, and must be deemed too high for a city with a good water supply. Hartford is said to have suffered from a milk-borne outbreak in 1914, and exceeds considerably the 1913 rate. Springfield, Mass., becomes conspicuous by having the highest rate of the eleven large New England cities both for 1914 and for the 1911-1914 average. This city is thought to have a

TABLE 6.—TOTAL AVERAGE TYPHOID DEATH RATE (1910-1914)

	Total Population (49 Cities) Estimated by U. S. Census Bureau Methods)	Typhoid Deaths	Typhoid Death Rate per 100,000
1910.....	20,244,499	3,910	19.31
1911.....	20,768,055	3,203	15.42
1912.....	21,291,611	2,611	12.26
1913.....	21,815,167	2,723	12.48
1914.....	22,338,723	2,283	10.22
	Total Population (57 Cities)		
1910.....	20,996,035	4,114	19.59
1911.....	21,545,014	3,391	15.74
1912.....	22,093,993	2,775	12.56
1913.....	22,642,972	2,892	12.77
1914.....	23,191,951	2,408	10.38

good water supply. Grand Rapids makes a curious lapse for a city which installed a water purification plant in 1912 and appeared to profit by it in an immediate typhoid reduction. What is the explanation?

Nashville, Tenn., had the highest typhoid rate in 1914 of any city in our tables, but this is perhaps not a final statement, as Memphis has not been heard from. Fifteen cities (New York, Chicago, Boston, Seattle, Cincinnati, Newark, Jersey City, St. Paul, Worcester, Oakland, Scranton, Cambridge, Bridgeport, Camden, Lowell) had an average typhoid rate of less than 10 for the years 1911-1914, Oakland and Camden[3] joining the cities mentioned last year.

The year 1914 is noteworthy for another considerable diminution in the typhoid rate in the total population here reviewed. A rate of but a little over 10 for nearly one-fourth of the population of the country is highly encouraging. While the nine cities that have just topped the 100,000 population mark raise the typhoid average somewhat, they do not appear to be very much worse than the larger cities. In 1914, 41 cities had a lower typhoid rate than in 1913 and 17 a higher; 24 cities had a death rate under 10 in 1914 as compared with 19 in 1913. The following cities had a death rate under 5: Cambridge, Mass., Bridgeport, Conn., Worcester, Mass., and Seattle, Wash.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

STANDARD RADIUM SOLUTION FOR DRINKING.—A solution of 2 micrograms of radium element and 1.3 milligrams of barium chloride per bottle of 60 Cc.

Actions and Uses.—See Radium. In view of the small barium content it is claimed that the physiologic action of barium may be ignored.

Dosage.—See Radium. The manufacturers recommend that from 60 to 180 Cc. (one to three bottles) of Standard radium solution for drinking should be taken daily, during or after meals.

Manufactured by the Standard Chemical Co., Pittsburgh, Pa. (The Radium Chemical Co., Pittsburgh, Pa.) No U. S. patents or trade-marks.

One gram of crystallized barium chloride is added to 40 liters of distilled water and the solution allowed to stand for a day; then 1,600 micrograms of radium element in the form of a solution of 60 per cent. pure radium chloride is added. This solution, after analysis by the emanation method to confirm its radium content, is then delivered into the bottles by means of an automatic pipet delivering 50 cubic centimeters of the solution, which contains, as stated, 1.3 milligrams of barium chloride and 2 micrograms of radium element. The bottles are then filled almost full to the stopper with distilled water.

The amount of radium may be determined by the "Emanation Method" of Rutherford and Boltwood as described in Rutherford's "Radioactive Substances and their Radiations," Cambridge, 1913, p. 659.

STANDARD RADIUM SOLUTION FOR BATHING.—A 5.2 per cent. barium chloride solution containing radium chloride equivalent to 4.20 micrograms (0.0042 milligrams) of radium element per bottle of 200 Cc. colored with fluorescein.

Actions and Uses.—See Radium. The barium in the Standard radium solution for bathing is said to have no effect, the radium chloride and the radium emanation being the only essential ingredients.

Dosage.—See Radium. Each 200 Cc., contents of one bottle, contains 4.20 microcuries (10,000 Mache units). When added to a bath containing 150 liters (40 gallons) the concentration of radium emanation in the bath will be about 70 Mache units per liter of bath water.

It is recommended that the patient, after entering a bath of about 90 degrees F., remove the stopper from the bottle of Standard radium solution for bathing and pour out the contents, holding the neck of the bottle just above the surface of the water in the tub to avoid loss of radium emanation. It is advised that the patient remain in the bath at least twenty minutes or, if possible, thirty minutes, and afterward remain in the bath room an hour if possible, the room being kept tightly closed.

Manufactured by the Standard Chemical Co., Pittsburgh, Pa. (The Radium Chemical Co., Pittsburgh, Pa.) No U. S. patents or trade-marks.

The solution is made up by dissolving barium chloride containing suitable amounts of radium in distilled water and then adding 1/50 c.c. of a 5 per cent. solution of fluorescein.

The amount of radium may be determined by the "Emanation Method" of Rutherford and Boltwood as described in Rutherford's "Radioactive Substances and their Radiations," Cambridge, 1913, p. 659.

STANDARD RADIUM EARTH.—A mixture consisting chiefly of silica with small quantities of carnotite, 450 Gm. (one pound) containing 0.45 micrograms of radium in the form of radium sulphate and in radioactive equilibrium with its decay products.

Actions and Uses.—See Radium.

Dosage.—See Radium. For use Standard radium earth is mixed with water and heated for thirty to forty minutes to 100 degrees C.

Manufactured by the Standard Chemical Co., Pittsburgh, Pa. (The Radium Chemical Co., Pittsburgh, Pa.). No U. S. patents or trade-marks.

Standard radium earth is a by-product in the manufacture of radium.

It is a very fine impalpable, brownish-gray powder yielding a thick paste with water.

The amount of radium can be determined either by the so-called "Gamma Ray Method" or, after dissolving the Standard radium earth, by the "Emanation Method" as described in Rutherford's "Radioactive Substances and their Radiations," Cambridge, 1913, p. 657.

STANDARD RADIUM COMPRESS.—A compress containing 225 Gm. (8 ounces) of a mixture consisting chiefly of silica, barium sulphate containing radium sulphate equivalent to 15 micrograms (0.015 mg.) of radium element.

Actions and Uses.—See Radium. Being applied wet, it is claimed that the action of Standard radium compress is partly due to beta and gamma radiation of the finely divided insoluble radium salts and partly to the radium emanation which is dissolved out by the water.

Dosage.—See Radium. The amount of radium being small, it is claimed that the compress can be applied for a long period of time without danger of inflammation or necrosis.

Manufactured by the Standard Chemical Co., Pittsburgh, Pa. (The Radium Chemical Co., Pittsburgh, Pa.). No U. S. patents or trade-marks.

To secure equal distribution the radioactive compress is packed in the pad in six compartments. When finished, the compress is sterilized by dry heat and packed in sterilized parchment paper.

The amount of radium can be determined either by the so-called "Gamma Ray Method" or, after opening the compress and dissolving the contents, by the "Emanation Method" as described in Rutherford's "Radioactive Substances and their Radiations" Cambridge, 1913, p. 657.

Typhus the Attendant of War and Famine.—There is good reason to believe that in the earliest ages of the world's history typhus fever accompanied famines, sieges and wars, just as it has in modern times. The first definite reference to the disease has been assigned to the eleventh century. Through the middle ages and down to the last century, typhus fever was prevalent in most European countries. The Napoleonic wars led in a serious and deadly extension of the disease. When these came to an end in 1815 and there was an era of peace, there was a marked subsidence of typhus. In 1846-7 there was another wide diffusion of typhus over Europe.—F. G. Clemow, The Geography of Disease.

3. Camden was not included in previous summaries.

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SATURDAY, APRIL 17, 1915

RECENT WORK ON CANCER

There are two phases of recent work on cancer that perhaps may be discussed briefly with interest at this particular time: the chemotherapy of cancer and the question of the inheritability of a tendency to the development of cancer.

The first topic receives extended and critical consideration at the hands of Weil[1] in this issue of The Journal. It would be idle to traverse again the ground so fully and ably covered in his report. Unfortunately there is no question but that the efforts at chemotherapy of cancer in man and animals up to this moment have not been successful. Even the results reported by Wassermann in mice treated with selenium and eosin for transplanted cancers now appear utterly insufficient to justify the hopes to which they gave rise when first announced.

In human cancer Weil proposes as the test of effective chemotherapy reduction in the size of the growth not explainable by natural processes. This is an altogether reasonable test well calculated to do justice to even minimum therapeutic effects, but when judged by this test all the various forms of cure of human cancer by chemical means are found to be without virtue. Whatever modifications of the disease that seem to be produced by these means are such as occur spontaneously, the alleged indications of the vainly hoped for cure being simply another exemplification of the post hoc ergo propter hoc fallacy in reasoning. Consequently an absolutely and uncompromisingly nihilistic attitude on the part of physicians with respect to cancer drugs, especially rashly exploited proprietary novelties, is warranted and demanded at the present time in order that false hopes may not lead timid patients to postpone radical surgical treatment until it is too late.

While the results of the work on chemotherapy must be set down as negative, the remarkable studies of Maud Slye[2] on the inheritance of cancer in mice are yielding positive results of great significance and interest. Miss Slye's work shows that in mice the tendency to develop cancer is transmitted from generation to generation in exact accord with the laws of heredity so that it can be bred into and out of strains of mice at will. She has bred cancer through ten generations, and in the stock of ten thousand mice under observation at present spontaneous cancer is always present, arising almost without exception in strains of known cancerous ancestry. The proper representatives of such strains of mice "carry cancer into a strain with which they are hybridized as inevitably as an albino mouse carries albinism into a pigmented strain with which it is hybridized, and with exactly parallel behavior of the character."

It is not cancer—carcinoma or sarcoma—as such that is transmitted, but the tendency of the cells to produce cancer under suitable conditions, which appear to arise especially as the results of all kinds of local irritation, reminding us of the undoubted rôle that ordinary chronic irritation plays in human cancer.

The mass of evidence presented by Miss Slye certainly warrants her generalization that in mice cancer tendency is a transmissible character, whatever the actual cause of cancer may be. This is a positive result, the full significance of which makes it one of the great contributions to our knowledge of cancer. While the exact study of the influence of heredity in human cancer at present is practically blocked because not enough facts can be obtained, we do not know of any exceptions or modifications to the great laws of heredity, which appear to be immutable and inevitable, that would justify an opinion to the effect that the observations on the inheritability of cancer tendency in mice are not applicable to man. Hence the final lesson drawn by Miss Slye and based on the idea that cancer is not transmitted as such but as a tendency to occur from a given provocation, probably in the form of overirritation, must be accepted as sound and practical: "The elimination as far as possible of all forms of overirritation to the tissues of an individual of high cancer ancestry should go far to eliminate the provocation of cancer; and the eugenic control of matings so that cancer shall at least not be potential on both sides of the hybrid cross ought to eventuate in a considerable decrease in the frequency of human cancer."

1. Weil, Richard: Chemotherapy and Tumors, The Journal A. M. A., this issue, p. 1283.
2. Slye: Jour. Med. Research, 1914, xxx, 281; 1915, xxxii, 159.

NEWER ASPECTS OF METABOLISM

For a long time physiologists have been endeavoring to find some suitable basis for the comparison of the metabolism of persons of different ages, sizes, sexes and temperaments under what might be called standard conditions of living. It has, of course, been recognized from the outset that there are marked differences between the infant and the adult in respect to the total energy transformation; but even aside from such obvious extremes, the apparent unlike dietetic needs of classes of individuals more nearly alike

in size and activity have raised the question of how to evaluate the variations observed. It became apparent to the earlier investigators that a comparison of the metabolism of different individuals could be made satisfactorily only when muscular activity and the absorption of food were temporarily excluded by making the observations on subjects in complete repose and in the postabsorptive condition. The measurement of the energy exchange in this way has been termed the "basal metabolism."

How is the basal metabolism of different persons or the same individual at different times to be compared; in other words, what are the factors determining or modifying normal basal metabolism? With the accumulation of valuable data made possible by the development of facilities for the study of the energy metabolism all over the world, it became apparent that the unlike basal metabolism in different persons was not to be explained merely on the basis of their unlike size in terms of body weight. Calculated into units of weight—into energy transformations per kilogram per hour, for example—the results were still divergent.

Following Rubner's lead, physiologists thereupon began to believe that the heat production of the living body (whereby the basal metabolism finds expression) is proportional to the surface area. As Benedict[1] has remarked, this helpful hypothesis served to bring order out of chaos in the earlier study of energy requirements and transformations in the living organism, but as experimental evidence accumulated, the validity of this so-called "law of surface area" has frequently been called into question. It is true that a smaller individual such as an infant, with a proportionately larger body surface losing heat, may have a larger metabolism per kilogram of body weight than a larger adult. The larger the number and the greater the diversity of types of subjects, the greater have become the complications and the apparent lack of uniformity by any method of comparison. Much of the evidence points to distinct individuality.

In view of the extended series of observations collected by him at the Nutrition Laboratory of the Carnegie Institution of Washington, and in disagreement with many other workers in this field, Benedict[1] rejects the current modes of comparison. He maintains that an examination of the available material shows that there is a relationship between the heat production and the body composition, that is, that any physiologic data which imply a difference in the proportion of active protoplasmic tissue are invariably accompanied by a difference in the basal metabolism. One of the indications in favor of the fundamental conception that the heat production of the body is proportional to the active mass of protoplasmic tissue is given by Benedict's study of the influence of athletic training.[2] Here differences in surface area were eliminated by making the comparisons only between groups of individuals with like height and weight. In general there was a distinct tendency for the athletes to have a measurably larger basal resting metabolism (about 7 per cent.) than the non-athletes with whom they were compared. The differences could not be due to changes in body surface. From what is known with regard to athletic training, it may be maintained that the increased catabolism is directly due to the larger proportion of active protoplasmic tissue in the body of the athletes.

Furthermore, according to Benedict, men with a smaller amount of subcutaneous fat and a correspondingly greater proportion of active protoplasmic tissue have been found to have a greater metabolism than women of the same height and weight. The study of normal and atrophic infants showed that with two infants of the same height and weight the elder, who would naturally be somewhat atrophic, invariably had a higher basal metabolism than the normal, well-nourished infant. Even with normal adults, it can be maintained that of two individuals having the same weight but different heights, the taller individual will, in general, have the greater proportion of active protoplasmic tissue, and the comparison of the heat production of normal men of like age and weight but different heights shows that there is almost invariably a distinctly greater metabolism with the taller individual.

It is along these lines that Benedict and his co-workers[3] interpret the recognized fact that the energy needs of men as a class are somewhat greater than those of women. In groups with essentially the same body surface area (and excluding individuals of athletic habits) it is not logical to assume, we are told, that the larger heat production noted with the men is due to a disproportion between the body measurements and the body surface. The data showing a basal metabolism for men about 5 or 6 per cent. greater than for women of similar weight and height are believed to find their explanation in other directions. In all probability the women, particularly in those groups with the greater body weight, have a much larger proportion of subcutaneous fat than do the men, thus indicating a consequent smaller proportion of active protoplasmic tissue.

A further stumbling block has been found in the fact that frequently normal individuals with approximately the same weight have very great variations in their basal heat production. To Benedict this appears as evidence that the mass of active protoplasmic tissue may function with varying degrees of intensity. It points strongly to distinct differences in the intensity

1. Benedict, F. G.: The Factors Affecting Normal Basal Metabolism, Proc. Nat. Acad. Sc., 1915, i, 105.

2. Benedict, F. G., and Smith, H. M.: The Influence of Athletic Training upon Basal Metabolism, Proc. Nat. Acad. Sc., 1915, i, 102.

3. Benedict, F. G., and Emmes, L. E.: A Comparison of the Basal Metabolism of Normal Men and Women, Proc. Nat. Acad. Sc., 1915, i, 104.

of cellular life. The basal metabolism of the individual thus appears as a function, first, of the total mass of active protoplasmic tissue, and, second, of the stimulus to cellular activity existing at the time the measurement of the metabolism was made. The latter feature involves the problems of age, sleep, the character of previous diet, and the after-effects of severe muscular work. Many of these factors may act as a stimulus to the protoplasmic tissue, resulting in a higher metabolic plane.

RUM IN THE BRITISH ARMY

Great struggles in civilization often produce results unexpected and unrelated to the issues at stake. Such a gigantic upheaval as the European war cannot fail to have a marked effect on the economic, social and moral development of the nations involved, as well as on their political future. Our knowledge of disease, as well as much of our modern conception of physiology, has developed since the last great European war. It is not strange, therefore, that, more than in any previous war, much attention should be paid to health problems and to physiologic conditions which affect the troops engaged. Never before has such a concentrated and gigantic effort been made to utilize all the available scientific and practical knowledge and experience in the solution of the problems developed by the struggles taking place between millions of men throughout almost the entire extent of continental Europe.

One of the significant results of the war is the astonishing growth of the sentiment against the use of alcohol in all forms and the increasing realization, on the part of both governments and people, of the gigantic economic waste involved in its widespread use. Russia has abolished alcoholic drinks, so far as imperial order can do so. Lloyd George has declared that England is fighting three foes, the Germans, the Austrians and alcohol, and that alcohol is the most dangerous of the three. King George has banished alcoholic liquors from the royal establishment. The French government has forbidden the manufacture and sale of absinthe and the German kaiser has strongly urged sobriety on his soldiers as the best means of fitting them to fight efficiently. This general recognition of the evils and harmfulness of alcoholic drinks, in the midst of a war which in previous ages would be regarded as a justification for the wildest license and indulgence, is significant.

Naturally, there has arisen widespread discussion of the general question of abstinence versus indulgence. This has been discussed from scientific, social, moral and economic points of view. One of the most interesting of these discussions has been going on for some weeks in the *British Medical Journal*. This started from an article by Sir Victor Horsley, criticizing the custom prevailing in the British Army in Belgium, of serving a ration of rum to men on duty in the trenches, on the ground that alcohol, even in small quantities, caused a loss of heat, a fall of body temperature, an impairment of coordination and a dulling of the special senses, and not only was of no assistance to the soldier in resisting the effects of fatigue, strain, exposure to cold and weather, but actually decreased his effectiveness as a soldier. Horsley reviews the history of rum in the British Army from the time of Marlborough to the present day and sums up the scientific evidence against it, as well as the history of its use in armies in India, Egypt, the Crimea, our American Civil War, and in South Africa. He quotes from the Army Regulations, authorizing the issuing of a rum ration "when certified by the Senior Medical Officer to be absolutely necessary for safeguarding the health of the troops." He then affirms that alcohol is not a safeguard to health, but is on the contrary a positive detriment and that under the Regulations, the medical officer is made responsible for such a ration. The frequency with which this custom is followed may be judged from Horsley's statement that the army authorities have contracted for a supply of 500,000 gallons of rum and that more than 250,000 gallons had been sent to France for the use of the army by the end of November, 1914. He urges the substitution of warm and nourishing drinks such as hot soup, milk, coffee, chocolate, etc., in place of rum, "seeing that warm nourishment enables a man to shoot better and encourages him to go forward, whereas rum makes him shoot badly and inclines him to sit still or even go back." Above all, he insists that the medical profession be relieved of the responsibility for this custom, in order that physicians may be free from the accusation that they are responsible for "this gross injury done to our country and its defendants."

As might be expected, these statements at once aroused comment. As usually happens in any discussion on this question, those participating seem to have devoted more attention to personal criticism of each other than to arguments on the point of issue, while the longer the discussion continues, the farther it gets away from the essential question. Several of the letters are no credit to their writers and had far better been left unprinted. The only real point which has been made against Horsley's contention is that raised by Astley Cooper, who practically admits all of Horsley's statements regarding alcohol, but says that "there are occasions when hot food and drinks other than alcohol cannot be obtained and when something is urgently needed temporarily to bring back life to benumbed limbs and shivering bodies." Under such conditions, he sees no harm, but even value in the emergency ration, "provided it is given with the distinct understanding that the effect is purely evanescent and is to be made permanent at the earliest possible

moment by hot food and non-alcoholic drinks." This being granted, the discussion then turns on the practicability of furnishing hot food for the men in the trenches and of thus eliminating the necessity for rum, which all admit, at best, should be used only when nothing better can be procured. The statement on the part of Horsley's critics that a small ration of rum does not impair the effectiveness of the soldier, he replied to by reference to experiments made by the Swedish army authorities who discovered that one-half the British ration caused a deterioration of 50 per cent. in accuracy of rifle shooting, and to the practical experience which has led the British naval officers to take their squadrons out of harbor for at least twenty-four hours before target practice and gun trials, in order to secure the highest possible scores. Personal prejudices and habits seemed to have influenced the various disputants. For instance, one correspondent objects to a comparison of the effects of Russian vodka, making the surprising statement that this is "a raw spirit distilled from rye with irritating properties which it is quite unscientific to compare with the properties of pure well matured rum upon the system."

After reading the many letters that form this controversy, the unbiased reader will be forced to the conclusion (1) that the use of alcoholic drinks is so entrenched in the social customs of the country, and so grafted on the habits of the people, that a dispassionate, scientific discussion of the subject is, for the present at least, hardly possible; and (2) that Sir Victor Horsley's presentation of the case contains demonstrable facts that will require something more than personal attacks and general statements of denial to refute.

TYPHUS IN SERBIA

According to reliable reports, a serious situation exists in the typhus fever epidemic in Serbia. The endemic cases in Poland and Serbia have developed under the favoring influences of war into an epidemic which may require the services of the world's greatest sanitarians before it is checked. A number of American Red Cross physicians and nurses and numerous European physicians have died while at work in the affected countries. In such epidemics the mortality of the disease may reach 50 per cent. Physicians everywhere should be prepared to recognize it, not only in its severe forms, but also in the mild forms which are not infrequent in many American cities.

The recent developments in our knowledge of the etiology and transmission of this disease have been largely due to American investigations. These advances have resulted from the clinical observations of Brill and the experimental work of several scientists, notably Ricketts, Anderson and Goldberger.

Typhus fever is doubtless of microbic origin, but the infective agent is probably so small that it must be placed in that ever puzzling class, the filterable viruses. While the etiology of the disease has not been determined, its mode of transmission has been worked out so that we are able to take reasonably efficient means for its prevention. It has been well demonstrated that the disease is communicated by the body louse and probably also by the head louse. This observation explains many puzzling features, for example, as McCrae remarks, the decrease of the danger of infection when the patient was removed to a hospital and the great danger to attendants in epidemics, to which Murchison drew attention.

The transmission of the disease to monkeys has enabled it to be made the subject of exact experimental work. Typhus fever formerly was very prevalent in epidemics, and also as sporadic cases, being known under the names of jail fever, camp fever, ship fever, etc., terms which indicate its close association with overcrowding and filth. With the progress of sanitary science, the prevalence of the disease decreased until it appeared to have vanished with the march of civilization, especially in this country.

In the United States the disease, in its typical form, has been found usually in ships coming into our seaports. A mild form of the disease has been discovered even in our farthest inland cities. It is important that the existence of this mild form should be borne in mind not only as explaining many puzzling cases but also as the possible source of epidemics when the virus may assume unusual virulence or the opportunity for transmission be unusually great. Clinically, the disease displays the absence of a characteristic course with the exception of the petechial eruptions. It is a general fever, in its severer forms, presenting the characteristic typhoid state. It is a striking fact that this typhoid state is observed with comparative rarity in modern epidemics of typhoid fever. The incubation period is put usually from four to fourteen days. The onset is abrupt, with headache, general pains and frequently with one or more chills. The eruptions appear from the third to the fifth day and the face is much reddened and swollen but rarely shows the characteristic spots. The temperature remains high, usually from 104 to 105 throughout the attack. The fever terminates by lysis in a great proportion of cases, contrary to the general belief. The duration is usually from twelve to fifteen days.

The prevention of the spread of this disease is a comparatively simple problem, although, as experience in the present war shows, it may be very difficult of accomplishment. It consists essentially in the destruction of vermin. This involves, of course, at the same time the removal of filth, the cleaning of the inhabitants, and the prevention of accumulation of waste. With the advent of warm weather the opportunity for cleanliness will be increased and it is to be hoped the spread of the disease will be restricted.

In this country our immigrant inspectors must take extra precautions to prevent the admission of numerous cases after the war has ceased. On the borders of Serbia troops are now compelled to undergo an official *Entlausung* (louse removal).

ANAL FISTULA AND MALE CLOTHING

Some one, sometime, will write a monograph on the influence of dress on disease—and it will not be concerned wholly with feminine dress and feminine fashions. Emphasis will be placed on the fact that the masculine hat has probably laid the basis for as many headaches as all the vagaries of feminine fashion in headgear. Something will also be said about the other end of the body. In spite of high heels and other abominations, feminine footwear, with the heel pushed farther toward the middle of the foot, has often proved a better support for the arch and foot generally than the supposedly much more sensible masculine footgear. Women suffer much less from flat foot than men, but so-called common sense shoes for women have often predisposed to such disturbances.

A recent article points out a condition, related to dress, which occurs between these two extremes. Philip H. Mitchiner,[1] on the basis of his work at St. Thomas' Hospital, London, calls attention to the preponderant frequency of fistula in ano in males. The proportion of males to females suffering from this affection, in over 1,500 persons who have been operated on for fistula in St. Thomas' Hospital during the past ten years, was about five to one. Other English statistics, which report the sex of patients with this disease, support this conclusion, and some of them present even a rather larger proportion of males.

Mitchiner has studied the occurrence of the disease particularly in children. It is very rare among them, but both at St. Thomas' and in the Hospital for Sick Children, London, all cases seen in children have ocurred among males. The commonest age for the occurrence of fistula in the comparatively rare cases in which it is seen among small children is from 3 to 5 years, and Mitchiner suggests that the liability to the affection at this time is probably connected with the custom of putting children into trousers during these years. He thinks that the cause of the disease in most cases is an infectious process set up by the irritation of the trousers, usually in connection with some rectal or anal disturbance, particularly hemorrhoids.

The development of fistula is due, in the case of adults, he believes, to the exposure to considerable friction on the perineal and anal regions from the male clothing, and especially "the liability of such friction to cause excoriation of prolapsed hemorrhoids with subsequent infection and suppuration in the neighboring glands in the ischiorectal fossa." This would emphasize, of course, the necessity for having the trousers fit not too closely in the perineum, and in all cases in which prolapsed piles exist, to be sure that this lesion does not become a site of infection through irritation from ill-fitting garments. Above all, cleanliness is an extremely important precaution in this region, if any infection of the anus exists, and looseness of the trousers in this part should be insisted on.

The presence of tubercle bacilli in the intestinal contents is particularly prone to set up chronic affections in the ischiorectal region, if there is a previous focus of infection of any kind in these parts. They are low in vitality and not very rich in blood supply, and therefore a favorable nidus for the growth of microbes, once the walls of the intestines themselves are penetrated by the infectious material.

1. Mitchiner, Philip H.: Brit. Jour. Surg., 1915, ii, No. 7.

THOMSEN'S DISEASE

Thomsen's disease is the name applied to an affection characterized by tonic muscular cramps at the beginning of voluntary movements. This designation is due to the fact that the manifestations were first described, in 1876, by a physician, J. Thomsen, by whom they were experienced and in whose family the disease had existed for five generations. Now that descriptions of more than one hundred cases have been collected[1] and the disease has actually been reported in Germany, France, Italy, Russia, Sweden, England and the United States, it deserves more than passing notice as an isolated oddity of medical experience. Hitherto Thomsen's disease has appeared to be more common in Germany and the Scandinavian countries than elsewhere. Doubtless it will be found in time, in the case of this malady like that of numerous other affections of the human organism, that when the symptoms are more generally understood and a certain theoretical interest is aroused in their genesis, new cases will be brought to light in unsuspected quarters. As an instance of an analogous awakening of appreciation, one need only recall the frequency with which heart block and the Stokes-Adams syndrome are now recognized in comparison with a decade or two ago. As a rule, the identification of Thomsen's disease should present no difficulty, for the myotonic disorder is observed in no other malady in precisely the same form, and the hereditary features will also generally assist in a diagnosis. Thomsen described the disorder manifested in himself and other members of his family by noting that in answer to a voluntary nervous impulse, difficulty is experienced in the muscles. There develops a tonic cramp condition in the biceps, for example, which then becomes stony-hard and only slowly recovers.

The veil of mystery which has covered the pathogenesis of Thomsen's disease is gradually being lifted.

1. Koch, H.: Ueber Thomsensche Krankheit, Leipzig, 1914.

The earlier theories, including that of Thomsen himself, postulated a psychic basis for its manifestations. Mental excitement was believed to augment the symptoms, and an explanation along the line of some psychopathic involvement was believed to help account for certain states said to be associated with the myotonic condition. A neuropathic view has attributed the disease to disturbances in the cerebrospinal nervous axis. By another group of writers, who have been impressed by the abnormal histologic appearance of the muscle fibers in Thomsen's disease in contrast with those obtained post mortem from normal subjects, it has been described as a primary muscular condition, and a myopathic cause thus assigned to the malady.

The study of this interesting problem has experienced progress in a series of observations on a family of eight children, half of whom were found to be affected with Thomsen's disease by Johnson and Marshall[2] at the Neurological Department of Guy's Hospital in London. The physical signs of the nervous system were normal in the three cases carefully investigated. The muscles were in all cases larger than normal, but the actual strength of contraction and ability to maintain that contraction for any length of time were below normal. Here, too, it was found in accord with earlier statements that the same muscle which gives a typical myotonic contraction on voluntary effort responds normally when brought into activity by reflex action. This important observation of two different types of response in the same contractile organ depending on reflex or voluntary stimuli, respectively, makes untenable the view that myotonia is primarily muscular.

The new histologic investigation of muscle in Thomsen's disease shows that the fibers are unquestionably larger than normal, their diameter being about twice the usual size. This augmentation is entirely the result of increase in the number of fibrils in each fiber. The nuclei are in proportion to the size of the fibers; there is no relative increase. Some of the nuclei occupy a position in the substance of the sarcoplasm. The longitudinal and transverse striation of the fibers showed no variation from the normal.

The permanent condition of increased tone and the prolonged spasm which follow a voluntary contraction must greatly increase the amount of work which the muscles are called on to do in myotonia. Johnson and Marshall accordingly look on the histologic changes in the muscle, which have hitherto formed one basis of the myopathic theory of the disease, as a natural secondary effect, a form of compensatory hypertrophy. Without calling on the ever available and persistently obscure hypothesis of some toxin or deranged internal secretion to explain the pathogenesis, they offer the novel suggestion that in Thomsen's disease there is an increased resistance to the passage of nervous impulses. The resistance would appear to be in the synapses.

This conclusion is strengthened by actual observations. Strychnin is known to act on the synapses of the central nervous system, facilitating the passage of a nervous impulse from one neuron to the next. In the patients of Johnson and Marshall, after hypodermic administration of this alkaloid the muscular movements became practically normal. They remark that it is inconceivable that the small amounts of strychnin administered could have had any direct action on the muscles. The partial block which is assumed to exist in the disease seems to be temporarily removed by the action of strychnin.

In elucidation of further peculiarities, we are reminded that it is known that gross lesions of the pyramidal tracts, when the cerebellar tracts remain intact, give rise to a condition of increased muscular tone and spastic movements. A partial obstruction in the higher motor path would account for the symptoms encountered in Thomsen's disease. Thus the myotonic character of the contractions, as has been remarked before, is most marked when movement is in response to voluntary effort. On repetition, a movement becomes brisker, as the block tends to wear off. On the other hand, reflex movements are normal, for here the higher motor paths are not involved.

This newer theory deserves the most careful consideration in future discussions of the subject. In place of the apparent futility of all therapeutic measures hitherto instituted it has left the tentative suggestion that strychnin may prove of use in the treatment of this form of myotonia.

2. Johnson, W., and Marshall, G.: Observations on Thomsen's Disease, Quart. Jour. Med., 1915, viii, 114.

Current Comment

SPONTANEOUS HEALING OF TUBERCULOSIS OF THE KIDNEY

It is common knowledge that tuberculosis in various parts of the body frequently heals spontaneously. Recovery may occur from even generalized invasions of tubercle bacilli, as shown by rare instances of healing of acute tuberculous leptomeningitis. One localization of tuberculosis, in regard to the spontaneous healing of which there seems to be some question, is in the kidney. Tuberculosis of the kidney is usually regarded as a rapidly fatal disease. In a recent article on tubercle bacilli in the urine, Brown[1] states that spontaneous healing of renal tuberculosis has been said to occur, but that when Albarran challenged the French surgical society "to produce one such case, none was forthcoming." Brown cites details of a case described by Ekehorn in which the kidney was found a pultaceous encapsulated mass, in which tubercle bacilli could not be demonstrated, the patient having

1. Brown, Lawrason: The Significance of Tubercle Bacilli in the Urine, THE JOURNAL A. M. A., March 11, 1915, p. 886.

presented pronounced symptoms of renal and vesical tuberculosis, seven or eight years previously. The ureter was closed. This case appears to illustrate the usual way, so far as we now know, of healing of renal tuberculosis. This sort of healing does not seem to be a very rare occurrence. Harbitz[2] describes twelve such cases in which the history went back over several years, in one case twenty. The active processes subside, the pus changes into a seemingly inert homogeneous material, which is encapsulated, the pelvis and ureter are obliterated, and whatever there may be of tuberculous cystitis fades away completely. In some cases the arrest follows the spontaneous evacuation of perinephritic abscesses by external rupture. Occasionally obsolete renal tuberculous foci are found in persons who apparently remained unaware of the process. Manifestly the arrest of so far advanced a process as here illustrated does not offer much encouragement to leave the course of events entirely to Nature, but it does raise a question as to the frequency with which tuberculous foci in the kidney are healed in the earlier and earliest stages. There seems to be a lack of observations on this point that perhaps might be supplied by systematic examination of a large amount of necropsy material.

FEDERAL THRIFT AND CHARITY

Many government documents make dry and uninteresting reading, but occasionally one is issued which, while apparently true to type, is thought-provoking. A few months ago THE JOURNAL, in publishing an abstract of one of the Notices of Judgment under the Food and Drugs Act, called attention to a somewhat remarkable action on the part of the court in this particular case. It concerned a nostrum sold under false and fraudulent claims. Analyzed by the federal chemists, it was found, according to the government report, to possess "no medicinal properties whatever." The stuff was, naturally, declared misbranded. No one appeared to defend the product, and the court entered judgment for condemnation and forfeiture, and then ordered that the product should be sold by the United States marshal! What it was sold for, or as what, the record did not state; neither was the ethical and moral status of the problem discussed. An equally remarkable instance of court action is reported in a recent Notice of Judgment dealing with the adulteration and misbranding of a so-called sherry wine. Three barrels of this product were declared misbranded by the federal officials on the ground that the stuff was not sherry wine but was an imitation prepared from pomace and glucose, and preserved with sodium benzoate. The officials declared that the stuff was liable to confiscation under the Food and Drugs Act, as it was not only misbranded but was also adulterated in such a way "as to reduce and lower and injuriously affect its quality and strength." All of the charges made by the federal officials were sustained, and no one appeared to claim the property. The court, therefore, entered judgment of condemnation and forfeiture, and ordered the United States marshal to remove the misleading labels, marking the stuff "Imitation Wine Preserved with 1/10 of 1 per cent. benzoate soda," and then distribute it "to certain charitable institutions"!

2. Harbitz: Norsk Mag. f. Lægevidensk., 1913.

LIMITATIONS OF THE REACTION WITH NINHYDRIN

Current medical literature bears witness to the interest which has attached quite recently to the triketohydrinden reaction, more popularly known by the name of ninhydrin reaction. Until very lately it has been regarded as a characteristic test for amino-acids or compounds of them, and consequently has found a wide application in some of the modern serum reactions, such as those introduced by Abderhalden in relation to pregnancy, cancer, etc. In view of the growing use of the reagent, it deserves to be pointed out that many substances which in no sense exhibit a combination of amino and carboxyl groups, as do the amino-acids and proteins, nevertheless give a characteristic reaction. Amines, amino-aldehyds, aminosulphonic acids, urea derivatives and certain organic acids may be mentioned in illustration of this statement. To these known exceptions Neuberg[1] has added a new series of both organic and inorganic substances, some of which might lead to deception in respect to the reaction. It would be of little advantage to recite here this list of compounds, which the specialist in this field should learn at first hand. Perhaps it is worthy of mention, however, that a minimal putrefactive change in proteins is sufficient to provoke the appearance of substances which give a strongly positive test with the ninhydrin reagent. They are presumably putrefactive bases which are in part of a volatile nature. These facts point to the necessity of caution in the interpretation of findings based on the use of the ninhydrin test.

1. Neuberg, C.: Ueber die Triketohydrindenreaktion, Biochem. Ztschr., 1914, lxvii, 56.

THE PATIENT'S OBLIGATION TO THE PHYSICIAN

A recent number of the Portuguese journal *Medicina Contemporanea* contains, in Portuguese, Article II of the original Code of Ethics adopted by the American Medical Association in 1847, "Obligations of Patients to Their Physicians." The *Medicina Contemporanea* states that it copied the translation from an old number of the *Jornal da Sociedade das sciencias medicas de Lisboa*, which in turn had credited it to the *Gazeta medica da Bahia*, of Brazil. "The statements in the article are as pertinent and wise now, after fifty years, as when they were first issued," says the modern Portuguese journal. It adds, "Many of the actions which would have been considered unethical then, even by the most unscrupulous, are now of common occurrence." As this part of the old "code" of ethics is no longer included in the "Principles of Ethics," it may be of interest to the younger members of our profession. We therefore reproduce it in the Miscellany Department of this issue.

TYPHOID FEVER IN THE UNITED STATES IN 1914

On another page[1] appears our third annual summary of typhoid fever in the large cities of this country. It is evident from the data there given that typhoid fever is on the way to become a relatively rare disease in many parts of the United States. There are two main reasons for this: 1. There are now comparatively few large cities in which the public water supply is likely to contain typhoid bacteria in dangerous numbers either constantly or occasionally. 2. The increase in the practice of pasteurization has resulted in a diminution in the amount of milk-borne typhoid. With these two great sources of infection largely removed, health officers are in a position to begin a detailed study of less generalized sources. Outbreaks due to carriers and other causes can be much more readily discovered when they are no longer screened by a mass of cases due to water or milk. The really astonishing decrease in typhoid fever since 1910, which amounts to a reduction of about 20,000 cases annually in a population of 23,000,000, is a matter for national congratulation. It is not too much to hope that by 1920 nearly all large American cities will have reduced their typhoid rates to a level fairly comparable with that maintained for some years past in Berlin and London.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Want License Tax Remitted.—A number of prominent physicians of Mobile appeared before the city commissioners recently to appeal for the abolition of the city license tax on physicians, which was raised the first of the year to a minimum of $17.50 and a maximum of $100.

To Handle Trachoma.—A complete survey of trachoma in Tuscaloosa County will be made by Dr. Robert A. Herring of the U. S. Public Health Service, stationed at New Orleans, who has been detailed by the surgeon-general to make the investigation. Some alarm has been caused on account of the spread of trachoma in Tuscaloosa.

CALIFORNIA

Summer Graduate Course.—A summer graduate course has been announced by the Leland Stanford Junior University, College of Medicine, San Francisco, for a term of five and one-half weeks, between July 6 and Aug. 14, 1915.

Health Officers Entertained.—Dr. Ralph L. Taylor, health officer of Long Beach, entertained the Los Angeles County Association of Health Officers, March 30. Addresses were made by Dr. Francis E. Corey, for twenty-seven years health officer of Alhambra; Dr. Luther M. Powers, health officer of Los Angeles; Dr. William A. Weldon, health officer of San Pedro.

GEORGIA

New Hospital.—The Union Hospital, Dublin, was opened April 1, as a hospital for Dublin and Laurens counties.

State Physicians to Convene.—The annual meeting of the Medical Association of Georgia will be held in Macon, April 21 to 23, under the presidency of Dr. William B. Hardman, Commerce.

Harrison Law Inspector Appointed.—Mr. George D. Case, Milledgeville, formerly president of the Georgia Pharmaceutical Association and State Board of Pharmacy, has been appointed state drug inspector of Georgia.

Personal.—Dr. William D. Jennings has been appointed surgeon for the police and fire department of Augusta.——Dr. Robert E. L. Burford, Brunswick, has been placed in charge of the Brunswick Quarantine Station.

Society Revived.—The Decatur County Medical Association, which has been practically defunct for several years, was reorganized at Bainbridge, March 31. Dr. George T. Clark, Bainbridge, was elected president; Dr. Baker Whisnant, Brinson, vice-president, and Dr. Gordon Chason, Bainbridge, secretary-treasurer.

IDAHO

Personal.—Dr. D'Orr Poynter, Montpelier, has been appointed superintendent of the Blackfoot Insane Hospital, succeeding Dr. George E. Hyde, Blackfoot.——Dr. Ernest E. Laubaugh, Boise, state bacteriologist, who has been making an investigation of a violently contagious disease which appeared among the children at Driggs, Fremont County, and which has caused five deaths, reports that the disease is streptococcus sore throat.

State Health Board Matters.—At a meeting of the State Board of Health at Boise, March 31, Dr. Oscar B. Steely, Pocatello, was elected president, succeeding Dr. William R. Hamilton, Weiser. The secretary of the board was given authority to cooperate with the U. S. Public Health Service in an investigation of the tick fever which prevails in Idaho. ——Dr. Ralph Falk, Boise, secretary of the board, has renewed his proposal to turn back to the state a portion of his salary. This offer was rejected by the board at its last meeting.

ILLINOIS

Case of Human Foot and Mouth Disease.—A press report from Rockford says that a case of foot and mouth disease has been diagnosed in the person of the village blacksmith of Winnebago. The patient had had pneumonia and after convalescence had begun developed an eruption about the mouth which aroused the suspicion of the attending physician that it might be an infection with the cattle disease. It is said that Dr. C. W. Crawford of the state board and Dr. Heman Spalding of Chicago confirmed this diagnosis.

INDIANA

Hospital Burned.—The Detention Hospital, Lafayette, was destroyed by fire, April 2, with a loss of $3,000.

Child Welfare Exhibit.—A child welfare exhibit will be opened at Evansville, April 20, at which many of the exhibits used in the state child welfare exhibition, Indianapolis, will be on exhibition.

Open-Air School Opened.—An open-air school for tuberculous children has been opened on the grounds of the technical institution, Indianapolis, as the result of the efforts of the Marion County Society for the Prevention of Tuberculosis.

State Board Election.—At the annual meeting of the State Board of Health held in Indianapolis, April 9, Dr. James S. Boyers, Decatur, was elected president; Dr. Harley H. Sutton, Aurora, vice-president, and Dr. John N. Hurty, Indianapolis, secretary. Dr. Hurty has served in this capacity for nineteen years.

Inspector Appointed.—H. Wallace Guinn, New Albany, has been appointed inspector for the thirty-five southern counties of Indiana under the Harrison Antinarcotic law.

Infirmary to be Remodeled.—Contracts have been let for remodeling the Fayette County Infirmary, in accordance with the requirements recommended by the state board of charities.

To Centralize Charitable Institutions.—An effort is being made to assemble in one place, probably at Julietta, near Indianapolis, all the eleemosynary institutions of Marion County. New buildings are needed for the County Hospital for the Insane at this place; an appropriation of $80,000 is asked for a municipal tuberculosis hospital and a building for orphans will also be erected.

Personal.—Dr. James W. Milligan, formerly assistant superintendent of the Northern Indiana Longcliff State Hospital, Logansport, more recently physician at the state prison, Michigan City, has been appointed superintendent of the Southeastern Indiana State Hospital, Madison.——A dinner

1. Typhoid in the Large Cities of the United States in 1914, special article, THE JOURNAL A. M. A., this issue, p. 1322.

was given at the Wabash Valley Sanitarium, Lafayette, March 3, in honor of Dr. Floyd A. Loop, superintendent of the institution.——Dr. William Palm, Harmony, fractured his clavicle and sustained other injuries in a recent automobile accident, near Brazil.——Dr. John D. Sourwine has established a hospital at Brazil.——Dr. Clint C. Sourwine, Brazil, is ill with septicemia in the Sourwine Hospital in that city.

IOWA

Hospital Board Named.—The members of the board of Mercy Hospital, Davenport, named by the Sisters of Mercy, are as follows: Dr. Henry U. Braunlich, Anthony P. Donohoe and William A. Stoecks, and those appointed by the staff are Drs. William H. Rendleman and Ray R. Kulp.

Hospital Notes.—Work has been resumed on the hospital at Mason City which is being built by the Roman Catholic Society under the direction of Bishop Keane.——Construction is being resumed on the new Lutheran Hospital, Hampton. Rev. F. O. Hansen has succeeded Rev. O. A. Henry as superintendent of the Iowa Lutheran Hospital, Des Moines.

Urge Medical Bureau for State Library.—The house appropriation committee has been asked to favor a building for the support of a medical department of the state library. The plan is to create a separate division of the library in which medical books may be assembled and made available to the medical men of the state. A good start has already been made for the medical library, by the contribution of the Drake Medical School and individual donations.

Personal.—Dr. John B. Heles, Dubuque, was operated on for appendicitis, March 28, at Mercy Hospital, Dubuque, and is reported to be doing well.——Dr. Edward R. Ames, Knoxville, is under treatment for lumbago in the Methodist-Episcopal Hospital, Des Moines.——Dr. Emmett E. Richards has been elected mayor of Hamburg.——Dr. Thomas F. Kelleher, Des Moines, who has been critically ill at his home, is reported to be improving.——Dr. Robert H. Woodruff, Charles City, has been appointed local surgeon for the Charles City Western Railroad Company.——Dr. Clyde A. Noland has been elected president of the Commercial Association of Ogden.——Dr. Harold H. Johnson, Princeton, sustained a fracture of the arm by the kick of a horse, March 18.——Dr. Frank W. Porterfield, Waterloo, has been appointed surgeon for the southern division of the Chicago Great Western Railway which includes the territory between Oelwein and Des Moines.——Dr. Chester A. Miller has been appointed postmaster of Nevinville.

MAINE

Personal.—Dr. William W. Varrell, York Harbor, has been appointed a member of the Board of Health of York. ——Dr. Alexander C. Hagerthy has been reelected mayor of Ellsworth for the seventh term.

No Vacation Typhoid at York.—The 2,500 inhabitants of the town of York have approved a plan whereby each is taxed one dollar to pay a full-time health officer whose duties will be to see that the town is kept in as sanitary a condition as possible, thus inviting the summer guests, on whom York depends in a great measure for its prosperity, to a real health resort. This determination of the townspeople of York was due to their experience with the typhoid-fever epidemic last year.

MARYLAND

Johns Hopkins Benefactress Dies.—Miss Mary Elizabeth Garrett, daughter of the late John W. Garrett, president of the Baltimore and Ohio Railroad, and a prominent philanthropist, who gave $300,000 toward the fund for the establishment of the Johns Hopkins Medical School, died at Bryn Mawr, Pa., April 3.

Changes at Bay View.—At a recent meeting of the supervisors of city charities, the following appointments were made at Bay View Asylum: Dr. Le Compte Cook, chief resident physician of the municipal tuberculosis hospital; Dr. Thomas P. Sprunt, medical resident of Ward A, the new general hospital at Bay View; Dr. C. P. Hoke, resident physician in the surgical department.

Aggressive Campaign for Hospital.—A campaign to raise $200,000 for the Maryland General Hospital has been inaugurated to pay off the floating debt of the institution and also for the completion of the private wards in the surgical building.

Personal.—Dr. Wright S. Sudler, Baltimore, formerly coroner of Highlandtown, had his right arm broken and sustained other serious injuries in a collision between his automobile and a trolley car during a blinding snow storm in Baltimore, April 3.——Senior Surgeon Henry Rose Carter, U. S. P. H. S., Baltimore, who will take charge of the anti-mosquito crusade in this city, has been promoted to the rank of assistant surgeon-general, under the act of Congress providing increase of rank in recognition of his work in Canal Zone sanitation.——Dr. G. G. Snarr, medical superintendent of the Franklin Square Hospital, Baltimore, is ill with a severe attack of tonsillitis.

MASSACHUSETTS

Theobald Smith Dinner Postponed.—Owing to the illness of Dr. Theobald Smith, Boston, the dinner which was to be given in his honor at the Harvard Club, Boston, April 17, has been postponed until June.

Joint Secretary for Boards Proposed.—Governor Walsh has presented to the members of the state boards of dentistry, pharmacy, embalming, optometry and veterinary medicine a proposition for the employment of one general secretary to keep their records, and for the maintenance of a joint office in the state house.

Endowment for Mental Disease Chair.—A campaign has been started to raise $150,000 for the endowment of a chair of mental disease in Harvard Medical School. The plan is for a full-time professor and is said to have the approval of Dean Edward H. Bradford and the endorsement of Drs. William N. Bullard, Walter Channing and Herbert B. Howard.

Personal.—Dr. William V. McDermott has been appointed a member of the Board of Health of Salem.——It having been arranged that Dr. Frank Burr Mallory of the Boston City Hospital shall devote all his time to research work the mayor has asked for a fund of $20,000 to be used for this purpose. Special efforts are being made in the direction of discovering antitoxins for scarlet fever and measles.

From Municipal to Federal Control.—The quarantine station of Boston is to be transferred to the federal government. This action was determined March 24 when the city council committee on ordinances voted to report favorably on the proposal at the next council meeting. The federal government is to lease the station on Gallop's Island until an agreement is made as to the price to be paid by the government for the property.

MICHIGAN

Personal.—Dr. Ralph G. Cook has been appointed chief medical officer of the Civil Service Commission of Kalamazoo.——Dr. A. F. Lyon Campbell, for seven years mine physician at Dunbar, has been appointed to a similar position at Florence, Wis.

Hospital Opened.—The Donald McRae Hospital, Alpena, was formally opened, April 8, but the institution will not receive patients until the building obligations have all been met. At present there is an indebtedness of $4,695, and a campaign is being made for the collection of this amount.

Dinner to Health Board President.—A complimentary dinner to Dr. Charles H. Oakman, president of the Board of Health of Detroit, March 29, in recognition of Dr. Oakman's work pertaining to the care of teeth of children in the public school, was attended by twenty-eight members of the dental department of the board.

MINNESOTA

Appropriation for State Institutions.—For the coming biennium, nearly $4,000,000 is needed to care for the 10,000 wards of Minnesota in the sixteen charitable, corrective and penal institutions conducted by the state.

Health Board Activities Curtailed.—On account of the lack of funds, the State Board of Health at a special meeting, April 6, ordered the suppression of the work of the Bureau of Vital Statistics and of the branch laboratories at Duluth and Mankato. Curtailment of the field work for the prevention of disease was also decided on.

State Board Appointments.—Governor Hammond announced on April 6 the following appointments for the State Board of Medical Examiners: Drs. Thomas McDavitt, St. Paul, reappointed for three years: Drs. Thomas Lowe, Pipestone; and Pierre C. Pylon, Paynesville, to succeed Drs. John E. Campbell, South St. Paul, and Albert G. Moffatt, Howard Lake, resigned.

Personal.—Dr. P. M. Hall, Minneapolis, has been reappointed a member of the advisory commission of the State Sanatorium for Tuberculosis, Walker.——Dr. Archibald W. Graham, Chisholm, who was convalescent after a severe illness, has had a relapse and is confined to his bed.——Dr. Thomas Zeien has been commissioned as postmaster at North Branch.——Dr. James McAuliffe, Duluth, who has been seriously ill with ptomain poisoning, is reported to be improving.——A farewell banquet was tendered Dr. Joseph D. Budd, Two Harbors, March 26, at which a silver loving cup was presented to him.

MISSOURI

Staff Reappointed.—The board of managers of the State Hospital No. 2, St. Joseph, at its monthly meeting April 6, reappointed the following medical staff: Drs. William L. Whittington, Calvin L. Woolsey, Ray O. Lieuallen and Amos T. Fisher.

Medical Laboratory to Be Established.—A meeting of the board of trustees of the medical laboratory to be established in St. Joseph by the Methodist Chuch South, was held April 2. The meeting was devoted principally to perfecting the organization of the board and arranging a plan for financing the laboratory.

Personal.—Dr. Albert W. Davis, Kansas City, who has been ill with pneumonia, is slowly convalescing.——Dr. Thornton E. Moore, Trenton, underwent an operation at the Wright Hospital in that city, March 29, and is said to be doing well.——The office of Dr. William Rienhoff, Springfield, was damaged by fire to the extent of more than $1,000, March 31.

St. Louis

Interns for City Hospital.—The names of 48 successful applicants for internships at the City Hospital were announced, April 7. Twelve of the 48 are graduates of St. Louis University; 6 of the Washington University Medical School; 13 of the University of Illinois; 7 of Northwestern University; 7 of Rush Medical College; 2 of the National University of Arts and Sciences, St. Louis, and 1 is a graduate of the University of Alabama, Mobile.

New Director of Hospital.—Dr. George M. Smith, formerly associate professor of pathology of Washington University, took charge of the Barnard Free Skin and Cancer Hospital, April 1, as medical director of the hospital and director of the research department. All beds in this institution (forty-four) are free for the study and treatment of cancer and skin diseases. All the facilities afforded by the institution are entirely free to patients, therefore Dr. Smith enters on an enviable field for the study of cancer. The endowment fund has lately been largely increased, which will enable the institution to further its facilities for the study of cancer both from a clinical and a purely laboratory (research) standpoint.

NEW HAMPSHIRE

State Board Change.—Dr. George C. Wilkins, Manchester, has been appointed a member of the State Board of Health, vice Dr. Frank E. Kittredge, Nashua, resigned.

Charges Unfounded.—The commission appointed by Governor Spalding to investigate the charges which led to the removal of Dr. Charles P. Bancroft, Concord, from the superintendency of the New Hampshire State Hospital, has reported that the charges against Dr. Bancroft were not well founded.

Cancer.—In the *Quarterly Bulletin* of the State Board of Health for January, Dr. Irving A. Watson, Concord, secretary, reviews the statistics of cancer in New Hampshire from 1884 to 1913. There has been a steady increase in the number of recorded deaths from 210 in the first mentioned year to 453 in the last. The total number of deaths for the thirty years was 9,096. Of these 3,075 were males and 6,021 females. The cancer death rate increased during the period from 5.93 to 10.42 per ten thousand of population. The state board has joined in the general efforts to educate the people in regard to cancer, and the state laboratory will examine all specimens submitted by physicians.

NEW YORK

To Eradicate Foot and Mouth Disease.—On April 1, Governor Whitman signed the Walters bill, which appropriates $50,000 for the eradication of the foot and mouth disease.

Personal.—Dr. Harry Jay Brayton, formerly connected with the Iola Sanatorium, has begun his new work as superintendent of the Onondaga County Tuberculosis Hospital, which is now nearing completion near Syracuse and will be opened in July.——Dr. Barton D. Skinner, Greenport, is seriously ill with pneumonia.

Talks on Health.—The director of the division of publicity and education of the State Department of Health has prepared a series of four lecture syllabi to be used by health officers. These syllabi deal with "Man and the Microbe"; "Health on the Farm"; "Clean Milk and Safe Milk," and "Tuberculosis." Each syllabus is provided with from thirty to fifty lantern slides and they are intended to supply health officers with good basis for their talks with the people.

Widow's Pensions.—The New York Legislature has passed the widow's pension bill granting "allowances" not to exceed the amount or amounts it would be necessary to pay to an institutional home for the care of the widow's children. The bill includes only mothers whose husbands are dead. They must be "suitable" to bring up their children, must have been residents of the counties for two years preceding the application for allowance and their husbands must have been citizens of the United States and residents of the state before death. The law contains a provision not found in laws in other states "that if such aid is not granted the child or children must be cared for in an institutional home." This, if strictly interpreted, would restrict the number eligible for allowances. The administration of the law is placed in the hands of the local board of child welfare in each county.

New York City

Physicians Lease Club.—Two physicians have leased the old Calumet Club House at Fifth Avenue and Twelfth Street, for a period of about five years. The building will be remodeled and used for offices by physicians.

City Will Not Lose Hospital.—Although the bill creating the city of Rockaway out of the Fifth Ward of Queens will pass the legislature, provisions have been made by which the city will still retain the Sea Breeze Hospital, with 1,000 feet of ocean front.

United States to Take Charge of Quarantine.—After attempts for twenty-five years by the Academy of Medicine and other bodies, to have the United States take charge of the quarantine station at New York, it is now announced that the Public Health Service will soon assume control of the plant at Quarantine.

Additional Instruction for Midwives.—The health department announces that it proposes to supplement the general meetings for midwives which have been held at the central office of the department by local meetings to be held in selected milk stations. It is hoped by this plan to reach a larger number of midwives who find it inconvenient to travel long distances to the central office.

To Keep Drugs from Prisoners in the Tombs.—The commissioner of corrections, Katherine B. Davis, announces that the construction of the Tombs Prison will be changed so that there will be a special entrance for visitors and they will be separated from the prisoners by a thick iron netting. A similar system is used at Sing Sing and it is hoped in this way to eliminate the drug smuggling and aiding prisoners to escape.

Health Department Offers Aid in Diagnosis and Treatment of Meningitis.—The Division of Preventive Medicine and Specific Therapy has brought to the attention of the physicians of the city that it has a staff of physicians and bacteriologists who are prepared to give assistance to practicing physicians in the diagnosis and treatment of meningitis and meningeal conditions. The health department emphasizes the fact that its representatives see the patient only in consultation and that it has no desire to supplant the family physician.

Deported for Causing Deaths by Wood Alcohol.—Nicholas Karolis, a Greek, was deported April 12 for causing the deaths of three men and the blinding of two others by means of anisette manufactured by him from wood alcohol and supplied to a grocer from whom the dead and injured men obtained it. Karolis pleaded guilty in the New York Supreme Court to manslaughter in the first degree and the sentence of deportation followed. The prosecution was instigated by the National Committee for the Prevention of Blindness. This is said to be the first indictment on so serious a charge as manslaughter in the first degree as the result of the sale of wood alcohol. According to Miss Carolyn C. Van Blarcom, secretary of the national society, during the past year in New York City alone there have been six deaths and five cases of blindness from wood alcohol poisoning. In 1912

twelve persons were blinded and three killed. Improvements in the manufacture of wood alcohol which have removed its coloring matter and much of the characteristic odor have permitted the substitution of this product in drinks, toilet and medicinal preparations, so that it is more than ever a dangerous drug, and efforts are being made to prevent its use by compelling its labeling as wood alcohol or poison. Legislation to bring this about is now pending in seven states. A bill for this purpose has recently been signed by the governor of Rhode Island.

NORTH CAROLINA

Dispensary in Operation.—The medical dispensary to be erected by the Associated Charities of Charlotte in the basement of the city hall, is now in operation every afternoon from 4 to 5 o'clock.

Checking Up Vital Statistics.—Dr. James R. Gordon, Jamestown, deputy state registrar, has visited a number of the counties of the state, checking up vital statistics and instituting prosecution where wilful and persistent violations are found.

Personal.—Dr. Joseph Akerman, superintendent of the James Walker Memorial Hospital, Wilmington, has retired and will be succeeded by Dr. Herbert A. Codington, Baltimore.——Dr. Everett A. Lockett, Winston-Salem, announces his retirement from general practice and that he will devote his entire attention to surgery and consultations.——Dr. Thomas O. Coppedge, a member of the staff of the State Hospital, Raleigh, has resigned and will resume private practice.

North Carolina Physicians to Make a Clinical Tour.—Dr. J. W. Long, Greensboro, writes that some twenty-five North Carolina physicians will make a clinical itinerary from April 17 to May 1. They will visit New York, Boston and Philadelphia. Special clinics are being arranged for them. Among those listed to join in the itinerary are Drs. H. A. Royster, H. McGee Tucker, Raleigh; R. L. Gibbon, C. M. Strong, G. W. Pressley, Charlotte; M. H. Fletcher, Asheville; S. H. Lyle, Franklin; C. S. Lawrence, Winston-Salem; M. H. Biggs, Rutherfordton; D. T. Tayloe, Washington; L. S. Booker, Durham; E. T. Dickinson, Wilson; R. S. Primrose, New Bern; J. F. Highsmith, Fayetteville; H. F. Long, Statesville; J. P. Monroe, Sanford; D. A. Stanton, High Point; P. R. McFadgen, Concord; D. A. Garrison, Gastonia; J. W. Long, C. W. Banner, J. A. Williams, W. F. Cole, Greensboro; Le Grand Guerry, Columbia, S. C., and F. H. McLeod, Florence, S. C.

PENNSYLVANIA

Wassermann Test Free.—Dr. Samuel G. Dixon, Philadelphia, state commissioner of health, announces that the State Department of Health Laboratory will hereafter make the Wassermann test free to physicians of the commonwealth.

Personal.—Dr. Edward W. Ryan, Scranton, after directing the American Red Cross fight against typhus fever near Belgrade, Serbia, has been stricken with the disease.——Dr. John A. Lichty, Pittsburg, has been appointed a commissioner of the State Board of Public Charities, vice Cyrus B. Laing, resigned.——Dr. Ralph T. Sowden, Slatedale, was seriously injured by the overturning of an automobile in which he was riding, March 29.

New-Home Day for Society.—Berks County Medical Society celebrated its New-Home Day, April 13. The program, held in the Medical Hall, Reading, included addresses by Drs. James Tyson and E. E. Montgomery, Philadelphia; an address on "The State Society and What it Offers to the Profession," by Dr. John B. McAlister, Harrisburg, president-elect of the state society; "The State Society and Its Relation to the American Medical Association," by Dr. Edward B. Heckel, Pittsburgh, president of the state society, and "The Advantages of a Library to the Medical Society," by Dr. James C. Wilson, president of the College of Physicians of Philadelphia. At the conclusion of the program, a dinner was given at the Berkshire.

Semicentennial of Society.—The fiftieth anniversary of the Allegheny County Medical Society will be celebrated by all-day exercises, April 20. In the morning there are to be clinics in the hospitals of Pittsburgh. The afternoon will be devoted to a formal meeting of the society with addresses by the president of the society, the president of the Medical Society of the State of Pennsylvania, and one giving the history of the society from the day of organization to the present time, followed by a symposium on "Intestinal Stasis." to be considered from the viewpoint of the internist by Dr. Thomas R. Brown, Baltimore, from that of the surgeon by Dr. John G. Clark, Philadelphia; from that of the orthopedist by Dr. Loring T. Swaim, Clifton Springs, N. Y., and from that of the roentgenologist by Dr. James T. Case, Battle Creek, Mich.

Philadelphia

Gross Prize Awarded.—The Samuel D. Gross Prize of the Philadelphia Academy of Medicine for the year 1915 has been awarded to Dr. John Lawrence Yates, Milwaukee, for his essay entitled, "Surgery in the Treatment of Hodgkin's Disease." The amount of this prize is $1,500.

Reception at Medical Club.—The Medical Club of Philadelphia announces a reception will be given at the Bellevue-Stratford, April 23, at 9 p. m., in honor of Edgar Fahs Smith, LL.D., provost of the University of Pennsylvania; Alba B. Johnson, Esq., for the president of Jefferson Medical College; David Milne, Esq., president of the Medico-Chirurgical College of Philadelphia, and Russel H. Conwell, D.D., president of Temple University.

National and International Health Movements.—Following the reading of a technical paper at a meeting of the College of Physicians of Philadelphia, April 7, a symposium on National Hygiene was held at which Dr. John A. Ferrell, assistant director-general of the Rockefeller Foundation, New York City, read a paper entitled, "The Organization and Activities of the International Health Commission"; and Dr. Joseph S. Neff, LL.D., Philadelphia, read a paper on "The Recent Health Movements in the United States, with Special Reference to Infant Welfare Work."

Educational Campaign for Medical Women.—A campaign to interest college girls in the medical profession and counteract the falling attendance of women at medical schools is being carried on under the auspices of the Women's Medical College by Gertrude A. Walker, who has just returned from a round of colleges. To the students of all these institutions Dr. Walker has pointed out the fact that owing to the advanced entrance requirements and advanced undergraduate standards, the number of female medical graduates in the country has in the last ten years decreased 44.1 per cent.

Philadelphia Ward in Paris Hospital.—The $15,000 necessary to open the Philadelphia ward of forty beds in the American Ambulance Hospital, Paris, and to maintain the ward for six months, has been exceeded by more than $8,000, and in addition five individuals have offered to duplicate their subscriptions, amounting in all to about $1,800, if it should be necessary to keep the ward open for a second period of six months. The staff from the University of Pennsylvania will take charge of an entire floor of the institution during the months of July, August and September, following the Harvard School contingent.

Physicians Held for Misuse of Mail.—Two physicians charged with using the mails to conduct wholesale medical swindles from a central office at 1801 Vine Street, were caught in a net spread by the United States postal inspectors, April 9. Drs. E. Smiley and George M. Frank were taken before United States Commissioner Edmonds and held in $2,500 bail, each. They represented themselves as being able to diagnose cases by mail and to prescribe medicine that would not fail to cure. Patients were required to pay a certain sum at the beginning of treatment and thereafter certain sums at regular intervals.

UTAH

State Board Appointments.—The following are appointments on the State Board of Medical Examiners: Drs. David C. Budge, Logan; Frederick E. Straup, Bingham Canyon, and A. P. Hibbs, Ogden, each to serve six years, and Drs. Charles L. Olsen, Murray; Frederick W. Taylor, Provo, and Walter M. Stookey, Salt Lake City, each to serve four years.

Personal.—Dr. Charles P. Harvielle, Salt Lake City, who was recently operated on in Denver for disease of the throat, is convalescent and will, it is said, regain his voice.——Dr. William L. Rich, Salt Lake City, has returned from abroad.——Dr. Robert S. Joyce, Ogden, has been appointed a member of the board of trustees of the Thomas D. Dee Memorial Hospital, Ogden.

Medical Courses Not Interrupted.—Word from the University of Utah indicates that the recent resignations of medical teachers were to become effective at the end of the present session, and not immediately, as implied in the editorial note following the letter in "Correspondence" in THE JOURNAL of April 3, 1915. It is evident, therefore, that the medical courses have not been interrupted, as inferred.

WASHINGTON

Tacoma Physician Starts for War Zone.—Dr. Llewellyn B. Ashton, Tacoma, left for Toronto, March 30, and sails for Europe this month as a member of the staff of the University of Toronto Base Hospital, which will soon be established in France.

Model Law for Morbidity Reports.—The common council of the city of Spokane in January adopted an ordinance requiring notification of infectious diseases modeled after the state law for morbidity reports, with only such modifications as were required to adapt it to city conditions.

Plague Rat in a Shipping Box.—The state horticulturist recently on opening a large box of plants from Yokahama, Japan, found a rat in the soil in the bottom of the box. The rat was killed and sent to the local representative of the Public Health Service at Seattle who reported that the rat was suffering from chronic bubonic plague. Careful investigation showed that the box had been opened in the appraisers' office in Seattle after landing from Japan, but it is not believed probable that the rat entered the box there. Conditions were said to be such that the rat might have survived the journey from Japan. The incident shows the possibilities of plague transmission from infected ports.

WISCONSIN

Bids Asked for Sanatorium.—Advertisement has been made for bids for the furnishing of all material and labor for the construction of a tuberculosis sanatorium for Kenosha County.

Health Appropriation Not to be Cut.—The Bradley bill providing to cut the annual appropriation of the State Board of Health from $40,000 to $20,000, was killed by the assembly, March 24, by a vote of 72 to 13.

New Hospital.—Arrangements have been completed for ten Belgian sisters to come to Rice Lake and establish a hospital. The present building will be greatly enlarged or a new building will be erected during the summer.

Bungalows for Inebriates.—Superintendent Moses J. White of the Milwaukee County Hospital for the Insane suggests that two bungalows constructed on the County Hospital grounds, Wauwatosa, would be sufficient to care for all the cases of liquor and drug addiction in the institution. While inebriates are now being admitted to the hospital, he believes that they should be cared for in a special building or buildings.

Personal.—Dr. Glenford L. Bellis assumed his duties as superintendent of the new Milwaukee County Tuberculosis Sanatorium, Wauwatosa, April 1. The institution will be ready for occupancy about July 1.——Dr. Albert E. Julien, Superior, will soon start for medical service in Germany.——Dr. Frederick C. Werner, Watertown, has been appointed deputy revenue collector under the Harrison act.——Dr. Jesse Y. Potter, New London, who was operated on recently, is reported to be improving.——Dr. George W. Lawler, Sussex, fell recently, fracturing his left leg near the ankle.

CANADA

Antitetanus Serum for Europe.—The Canadian Red Cross Society has ordered from the antitoxin department of the Ontario Board of Health, 5,000 doses of antitetanus serum which will be forwarded to England for distribution to the Canadian Hospital at the front and the French Red Cross Society.

New City Hospital.—It has been determined by the city council of Hamilton and the board of governors of the present public hospital, to begin at once, the erection of a new hospital to accommodate more than 500 patients, for which $2,000,000 has been appropriated. The first section, to cost $150,000, is a four-story reenforced concrete building without basement.

Personal.—Drs. Robert L. Collins and Walter H. Scott, Edmonton, Alta., have gone East to join the Canadian expeditionary force.——Dr. Archibald J. Amos of the Dominion Government Research Laboratories, sailed on the *Lusitania* for Liverpool.——Dr. Francis J. Shepherd, Montreal, has returned from a trip to Bermuda.——Dr. Harry A. Boyce, superintendent of the Kingston General Hospital, Ontario, has resigned after a service of seven years.——Dr. Oscar A. Cannon, Stratford, Ont., has reported at Halifax, N. S., to sail for England as head surgeon of the army medical corps reinforcements.

Canadian Doctors for Serbia.—The Serbian government informs Agent Pelletier of Quebec Province in London, England, that 100 applications have been received from all over Canada from those willing to serve in the civil service in Serbia to replace Serbian doctors at the front. Only fourteen can be accepted; and these will be required to speak either French or German perfectly. Passage money, not exceeding 2,000 francs will be paid by Serbia, and the ordinary pay will be 500 francs monthly, with opportunity for fees by those able to pay for services. Successful applicants will be required to stay in Serbia at least three months and to find their own board and lodging.

Dr. Adami to Record Medical History of the War.—Dr. J. George Adami, professor of pathology in McGill University, Montreal, has left Montreal for England to take up important work as a member of the British War Office, having on hand the preparation of the medical history of the war. Dr. Adami has received his appointment from the British government, but he has also been specially appointed by the Canadian government to look after the medical records of the Canadian expeditionary forces. Dr. Adami was going with the McGill Hospital but was relieved of this service. Sir William Osler is to be a member of the committee having the matter in charge, and Dr. Morley Fletcher is the secretary. Their work will be to go into all the medical records of the war.

GENERAL

Sociologists to Meet in Texas.—The Southern Sociological Congress will convene in Houston, Tex., on May 8, for a three-day session, under the presidency of former Governor W. H. Mann of Virginia.

Directory of Health Boards.—*Public Health Reports*, April 2, contains a directory of state and insular health authorities for 1915 which should be useful for the information of health officers and others interested in health activities.

Vaughan in Philadelphia.—At a special meeting of the College of Physicians and Surgeons of Philadelphia, April 12, Dr. Victor Clarence Vaughan, Ann Arbor, Mich., delivered an address on "The Study of Camp and Military Hygiene, Its Sanitation and Relation to War Mortality."

Railway Surgeons Meet.—The eighth annual meeting of the Joint Association of Surgeons of the Illinois Central and Yazoo and Mississippi Valley Railroad companies, was held in Memphis, March 31 and April 1. Dr. Guy G. Dowdall, Chicago, is secretary and executive officer of the association.

Personal.—Captain Robert Charles McDonald, M. R. C., U. S. A., who has been in charge of the American Red Cross Hospital, Budapest, Hungary, for five months and was decorated by Emperor Francis Joseph of Vienna for distinguished service, reached New York, March 25, on the steamship *America*.

Hospital Ship Returns.—The Hospital Ship *Solace* with Medical Inspector Robert M. Kennedy, U. S. N., in command, arrived at the Navy yard, Washington, D. C., from Guantanamo Bay, Cuba, April 7, with 130 patients on board, 74 of whom were transferred to the Naval Hospital, Washington. The *Solace* sailed to rejoin the fleet, April 8.

The Study of Epilepsy.—The fourteenth annual meeting of the National Association for the Study of Epilepsy and the Care and Treatment of Epileptics, will be held in the Hotel Chamberlain, Fortress Monroe, Va., May 10.——Immediately following this meeting will occur the seventy-first annual meeting of the American Medico-Psychological Association.

Naval Medical School Commencement.—The formal commencement exercises of the United States Naval Medical School, Washington, were held April 15. The secretary of the Navy delivered the certificates and addressed the class; Surgeon-General William C. Braisted delivered an address and the formal oration was delivered by Dr. Paul B. Barringer of the University of Virginia, Charlottesville.

To Fight Typhus in Serbia.—A party of physicians headed by Dr. Thomas Wright Jackson sailed for Naples from New York, April 3, under the auspices of the Red Cross, for health work in Serbia. In the party were Drs. Eugene W. Caldwell and Hans Zinsser, New York; Andrew V. Seller, George C. Shattuck and Francis B. Grinnell, Harvard, and W. S. Standifer and Luis de la Pena, who have recently been on duty in the Canal Zone as specialists on diseases caused by insects.

Fighting Typhus.—The presence of typhus in Europe and the finding of an occasional case in this country draws atten-

tion to the necessity for greater precautions against the entrance of the disease, particularly at the close of the European war when immigration from the infected area will probably increase. As a step in this direction the government is arranging to take over the quarantine stations heretofore maintained by state and port authorities at ports of entry such as Boston, New York, Baltimore, Galveston, etc. Dr. J. A. Nydegger of the U. S. Public Health Service at Baltimore urges that the taking over of the quarantine stations be hurried in preparation for the influx of immigrants at the end of the war. He says that only through federal control of all quarantine stations can the health of the people of the United States be properly safeguarded. Typhus has already appeared at New York.

Leprosariums.—In answer to many letters regarding employment in leper colonies, the U. S. Public Health Service announces that no leper colonies are maintained by the United States, but that the following leprosariums are in operation: San Francisco (Cal.) Leper Home, administered by the health officer at San Francisco; Louisiana State Leper Home, administered by the Board of Control for Leper Homes, New Orleans, La.; Massachusetts Leper Station, Penikese Island, Mass., administered by the state commissioner of health, Boston; Hawaiian Leper Colony, Molokai, Hawaii, administered by the director of health, Manila, P. I.; Philippine Leper Island, Culion Island, P. I., administered by the director of health, Manila, P. I., and Porto Rico Leper Colony, Cabras Island, P. R., administered by the insular director of sanitation, San Juan, P. R.

Promoting the Antituberculosis Campaign.—The National Association for the Study and Prevention of Tuberculosis is about to inaugurate a movement to secure better cooperation from physicians and nurses in the antituberculosis campaign. Efforts have been made to induce medical colleges and schools of nursing to give more instruction of clinical nature in tuberculosis. Individual practitioners and nurses are to be reached by special booklets prepared for the purpose. The object of the plan is primarily to secure more accurate and earlier diagnosis of tuberculosis by physicians, and to show nurses the opportunities for service in the cases of consumptives. The plan has been approved heartily by medical colleges and schools of nursing. It will be the aim to put the average family physician in touch with the best methods of treating tuberculosis, and with the most recent literature on the subject.

Warnings.—Dr. Solren W. Staads of Sioux City, Ia., states that on Oct. 13, 1914, Fred Hernbloom, then agent for the American Accident Insurance Company of Lincoln, Neb., sold him two policies in this company for which he gave an official receipt. The company claims that Hernbloom has turned in neither the applications for the policies nor the premiums thereon, that he is no longer their agent and will not inform Dr. Staads where he can be found. Dr. Staads requests that anyone who may learn of the address of Fred Hernbloom, will notify either Hon. E. H. English, commissioner of the insurance department of Iowa, or Dr. Staads.

The medical profession is warned against a young man traveling under the name of Paul Goodman, who has claimed to be a representative of the Victor Electric Company, and endeavors to gain the confidence of physicians to induce them to cash a personal check. The Victor Electric Company states that it does not know this man, he has never been in its employ nor handled its goods directly or indirectly. "He is said to be a little fellow, about 22 years old, and all scarred up, and claims the burns were caused by electricity." This man has been operating in Terre Haute, Ind., Omaha and Hastings, Neb. Any physician knowing of this man's whereabouts will confer a favor on the Victor Electric Company by sending a collect telegram to the company at its general office in Chicago.

The attention of physicians is again called to the activities of certain young men in Pennsylvania who are attempting to secure subscriptions for THE JOURNAL and other magazines through a bureau which they call the National Educational Association, the plea being based on the desire of the young men to secure free scholarships. When last heard of the scheme was being pushed in Philadelphia.

THE JOURNAL is informed by Dr. Linsly R. Williams, deputy commissioner of the New York State Department of Health, that a man recently presented himself in Butler, Pa., as George H. Gray, pathologist of the New York State Board of Health, and incurred numerous obligations, after which he left without settling them. The New York State Department of Health has never had anyone of this name in its employ, and desires to warn others against this impostor.

HAWAII

Japanese Hospital in Hawaii.—Work is commenced on the erection of a new Japanese hospital in Kuakini Street, Honolulu, to cost $20,000.

FOREIGN

French-Grecian Medical Association.—The *Grèce Médicale* states that a library of French medical works and periodicals is on the point of being opened at Athens by the newly founded Alliance médicale Franco-Hellénique. They plan also an annual series of postgraduate medical lectures and demonstrations by leading French specialists. Professor Phocas of Athens is the president and Sotiriades the secretary at Athens, and P. Descomps, the secretary at Paris.

Quinin at Cost.—By a decree of the president of Venezuela, dated Dec. 19, 1914, in order to secure a good supply of quinin and to extend its use, the national health office is directed to establish stores in which quinin shall be sold at cost. Charitable institutions (public or private), the regular army and wholesale and retail drug stores may also be supplied at cost. Its distribution and inspection as to quality is to be under the supervision of the Department of the Interior.

Death of Loeffler.—The cable brings word of the death at Berlin of Prof. Friedrich Loeffler, aged 63, discoverer of the diphtheria bacillus in 1884 and of the glanders bacillus two years earlier. In 1887 he founded, with Leuckart and Uhlworm, the *Centralblatt für Bakteriologie*, and long served as professor of hygiene at Greifswald, as member of the imperial board of public health, and, more recently, as director of the Institute for Infectious Diseases at Berlin, and was repeatedly called on to represent Germany at various scientific meetings and on scientific missions. As an army surgeon, hygienist and research worker the list of his publications is a long one, including his work on prevention of foot and mouth disease. Those who attended the International Congress on Hygiene and Demography at Washington in 1912 will remember Professor Loeffler's joining in the discussions on poliomyelitis, etc.

WAR NOTES

Aid for Belgian Physicians.—As the war continues the need for aid to Belgium daily becomes greater; in fact, for at least six months after the ending of the war this duty of feeding the starving must be continued. The infant mortality is enormous because of the lack of adequate nourishment. The world looks to America as the great neutral nation to give aid in this time of stress.

The report of the treasurer of the committee of American physicians for the aid of the Belgian profession, of the week ending April 10, 1915, lists the following contributions:

The Cooke County Medical Society, Gainesville, Tex.	$ 15.00
The Sedgwick County Medical Society, Wichita, Kan.	25.00
Dr. Carl B. Davis, Chicago, Ill.	10.00
Dr. R. C. Dorr, Batesville, Ark.	5.00
Anonymous, "J," New York, N. Y.	5.00
Dr. George Leonard Schadt, Springfield, Mass.	5.00
Dr. Mark T. Goldstine, Chicago, Ill.	10.00
Dr. Lomax Gwathmey, Norfolk, Va.	25.00
Dr. J. C. Chipman, Sterling, Colo.	5.00
Miss Grace Hutchison, Canton, N. Y.	2.25
Dr. Brooke M. Anspach, Philadelphia, Pa.	5.00
Dr. J. B. Haskins, Chattanooga, Tenn.	15.00
Dr. Fred W. Phifer, Wheatland, Wyo.	5.00
Dr. Henry P. Brown, Jr., Philadelphia, Pa.	10.00
Dr. Floyd W. McRae, Atlanta, Ga.	10.00
Dr. William L. Rodman, Philadelphia, Pa.	25.00
Anonymous, "F," St. Johnsbury, Vt.	10.00
Dr. Joseph P. Murphy, Brooklyn, N. Y.	5.00
Dr. Rudolph Matas, New Orleans, La.	25.00
Dr. Neal N. Wood, First Lieut. M. C., U. S. A., Schofield Barracks, Hawaii	5.00
Cumberland County Medical Society, Bridgeton, N. J.	10.00
Gonzales County Medical Society, Gonzales, Tex.	10.00
Receipts for the week ending April 10	$ 242.25
Previously reported receipts	5,896.50
Total receipts	$ 6,138.75
Previously reported disbursements:	
1,625 standard boxes of food @ $2.20	$3,575.00
1,009 standard boxes of food @ 2.30	2,320.70
Disbursements for the week ending April 10:	
105 standard boxes of food @ $2.30	$ 241.50
Total disbursements	$ 6,137.20
Balance	$ 1.55

One box of surgical instruments sent to the American Commission for Relief in Belgium, through *Surgery, Gynecology and Obstetrics*, without name of donor and without a list of contents.

F. F. SIMPSON, M.D., Treasurer,
5 Jenkins Arcade Bldg., Pittsburgh, Pa.

LONDON LETTER

LONDON, April 1, 1915.

The War

THE ALCOHOL QUESTION

The examples set by Russia in totally abolishing the drinking of vodka and of France in abolishing absinthe have been seized on by the teetotalers as a moral for this country, and they have exhorted the nation to stop the sale of drink, which is helping to prolong the war. Taking the country as a whole, the war has not been attended with any increase of alcoholism, rather the contrary; but in certain groups, particularly dock workers, increased wages have led to a certain amount of abstention from work, the result of drink. An important deputation of shipbuilders has waited on Mr. Lloyd George, Chancellor of the Exchequer, and urged him that in order to meet urgent national requirements there should be a total prohibition of alcohol during the period of the war. It was represented that mere restriction of hours or even total prohibition within certain war-work areas would not be sufficient, as certain classes would be entirely unaffected. In many cases the number of hours worked is actually less than before the war, and in spite of Sunday labor, 80 per cent. of the present avoidable loss of time was attributed to drink, and the figures of the takings in saloons near the shipyards showed an increase of the sale of intoxicants of from 20 to 40 per cent. Curtailment in the hours of sale had proved useless, and led to the pernicious habit of buying spirits by the bottle to drink elsewhere. Mr. Lloyd George said in reply that the facts placed before him by the deputation were only too convincing, and he had a growing conviction that nothing but radical measures would avail. We were fighting Germany, Austria and Drink, and the greatest of these foes he thought was Drink. Success of the war was merely a question of munitions. On receiving a report of the proceedings, the king sent a letter to the chancellor stating that he felt that nothing but the most vigorous measures would successfully cope with the grave situation in our armament factories. Owing to drink, we were unable to secure the output of war material indispensable for the army, and there had been much serious delay in the conveyance of the necessary reinforcements and supplies to the front. The continuance of such a state of things must inevitably prolong the horrors and the burdens of this terrible war. If advisable, the king is prepared to set the example by giving up all alcoholic liquors himself and forbidding their consumption in his household, so that no difference shall be made as far as he is concerned between the treatment of the rich and the poor in the question. In another form the problem of alcohol has also become a burning one. It is the custom to issue a ration of rum to the troops in the trenches. The teetotalers in the profession, led by Sir Victor Horsley, have denounced the procedure in the *British Medical Journal* as injurious, and a somewhat acrimonious controversy has arisen on the still unsettled question of the value of alcohol as a beverage. Some correspondents have pointed out its food value on the basis of its oxidation in the body, but Sir Victor Horsley rejoins that oxidation is no proof of its value as a food, for morphin is oxidized in the body and no one claims that it is a food. For him the consumption of alcohol is an unmitigated evil which only diminishes the efficiency of the soldier.

FOOD IN TIME OF WAR

A conference has been held at the Institute of Hygiene on this subject. The chairman, Sir Malcolm Morris, said that the public could not complain of lack of counselors as to what they should eat, but unfortunately the conselors gave discordant advice. Even vegetarians were divided. Dr. Strickland Goodall moved a resolution, which was agreed to, that the Local Government Board and Education Board should adopt measures forthwith to encourage better knowledge of foods and food values in the interest of public health and economy. He said the Germans had paid an enormous amount of attention to the question of civilian diet. With the exception of a fifth of the supply of food, Germany was self-supporting, while we imported two thirds of our food supply, our colonies sending us what we required and the navy saving us from any deficiency. Great waste of food went on in this country. In Germany housewives had printed instruction showing how waste of foodstuffs might be avoided, to use starch for linen, and there were fatty substances used in making soap that might be used in preparation of food. Dr. Gasteneau Earle said that as to the required amount of protein, physiologists were not agreed, but generally speaking, in England they were in favor of a high protein diet. Lieutenant-Colonel Melville said 190 gm., while Chittenden in America said 50 or 60.

Dr. R. Hutchison said diversity of opinion was not surprising; there were a hundred ways of nourishing the human body, and all might be right. He did not believe in being too scientific. The recent investigations in Germany had been ultrascientific and were untrustworthy as to food production. To construct a gigantic scientific edifice on the estimate was extremely rash, and he had no doubt it had been adapted like many other professorial utterances to serve a government purpose. In any country, under present conditions, there could not be, for economic reasons, a great deal of overeating. It could not be true of the bulk of the inhabitants of any country. No country could afford it. The bulk of the inhabitants of this country were certainly not people who overate. It would be more true to say that a large proportion of the people are habitually underfed. It was of no use to preach to people that they should eat less as one might in a besieged town. So long as the navy kept the seas there was no lack of food. But as a question of economy, what was the cheapest way? The most expensive part of diet was the protein which entered so largely into animal food. Most people got it in the form of meat; the deliberate wisdom of inhabitants in temperate climates had declared that a certain proportion in the form of meat was right. But when meat became too expensive, there were other sources to be drawn on. One of these sources was cheap fish; the herring, for instance, was an excellent substitute which did not seem to be used as formerly. Cheese of the cheaper kinds, milk was valuable, and peas and beans were good sources of proteins, though with them there was the difficulty of digestion. For the richer classes, he continued, his advice would be, "Eat less meat." Certainly it had been shown that for a considerable number of months people did very well on small quantities of meat, and certainly the wealthier classes would not suffer. As to what was called fuel food, there economy was more difficult, because mankind had adopted bread as the cheapest form of diet, and when bread became scarce a substitute had to be found. The Germans had to some extent found a substitute in potatoes. In this country we might use some of the fats used in the manufacture of soap. Margarin was an excellent food, as nutritious as butter; the prejudice against it was unfounded. He would rather have a good brand of margarin than of bad butter. No doubt in this country we were extremely wasteful in food; we literally threw it away.

PARTLY TRAINED NURSES

The difficulty in supplying nurses for the large new army has caused the authorities to extend the qualification for service in order to render available every woman with nursing experience. The regulation that candidates for the army service must have a certificate of training from a hospital of 100 beds is to be suspended, and candidates from hospitals of fifty beds will be accepted if suitable in other respects. The age limit has been extended from 35 to 45. Accepted candidates must serve for a year either at home or abroad as they may be required. For service in the home hospitals, nurses required, as matrons, superintendents or sisters, if healthy and fit for work, will be accepted probably up to the age of 50. There will be full opportunity for retired or married nurses and nurses who have not completed their training. In addition, provision has been made for employing the many women outside the ranks of fully or partially trained hospital nurses who have taken certificates in home nursing and first aid. Such women will be accepted in certain hospitals as probationers for a month, and if recommended by the matron for further service, they may sign on for a year or the duration of the war, and receive a salary. They must be not less than 23 nor more than 38 years of age. There is a possibility that 3,000 carefully chosen certificated women from voluntary aid detachments will be needed.

A WAR NURSES' RELIEF FUND

Already many nurses have suffered severely both mentally and bodily from their arduous duties. A committee has been formed for the purpose of providing funds to help them. Nurses on the staff of the army or navy are provided for by the government, but so far no relief had been arranged for the civil nurses, of whom between 1,500 and 1,600 have come to the aid of the country. Some of the conditions which they endure have been thus described by Miss Swift, matron-in-chief of the British Red Cross. They are often nursing in the midst of a bombardment for hours on end in the noise and the danger, their hospitals constantly the aim of the enemy's shells. They put up without murmuring with the

most insanitary and uncomfortable conditions. At St. Omar, for instance they have no proper beds, no sanitary accommodation, no baths, and they had to face the same conditions at Dunkirk and other places. So far none have been killed by shells, but one had a surface wound from a shell which might easily have been fatal. Shells were dropped continually on or near the hospitals in Antwerp, and the nurses who went through the strain of that bombardment are completely nerve-shattered. A good many nurses have been down with typhoid and typhus, particularly those who are nursing in Serbia. The nurses who are running these risks are the pick of their profession, many of them women who command high fees and who have thrown up their civil work in quiet practice, where their own comforts were as sure as those of their patients, and have given their services for very little, because they knew they were needed.

THE PROFESSION AND WAR EMERGENCIES

Fresh suggestions continue to be made as to the means of overcoming the difficulty arising from the withdrawal from civil practice of a large number of physicians for the new army. The Scottish Medical Service Emergency Committee has issued a memorandum on the subject addressed to the public, the local education authorities, retired physicians who are still fit, and the younger lecturers at the medical schools. To the public it is suggested that it will materially help to relieve the great strain now imposed on physicians remaining at their posts throughout the country—many of whom are working from fifteen to sixteen hours a day—if patients will send messages for the physician as early as possible in the morning, so that the physician may arrange his daily round in the way most economical of time. Where the case is not urgent and a visit on the next day will suffice, this fact should always be stated in the message. To the local education authorities it is suggested that regular medical inspection of schoolchildren is not nearly so urgent as attendance on patients who are dangerously ill. They appeal to schoolboards and other educational authorities to release entirely, or in part, those physicians who are willing during this emergency to resume general medical work for the public. Retired physicians are offered opportunities for service that will not involve excessive strain. The younger lecturers are asked to substitute a change of work for the customary annual holiday, and to offer their help to country colleagues in difficulty. Many physicians, especially in rural districts, are overworked and breaking down. The executive committee of the Newcastle-on-Tyne branch of the British Medical Association has appealed in the press for the cooperation of the public in assisting the profession in dealing with their overwork. They are asked to restrict as far as possible their calls on physicians at untimely hours and to send the request for visits before the physician leaves for his rounds in the morning.

PARIS LETTER

Paris, March 25, 1915.

The War

ENROLMENT OF THE 1916 CLASS

The instruction of the young men of the 1915 class is already so far advanced that they can soon be sent to the armies. Accordingly, the minister of war is taking measures to replace them immediately in the training camps by the conscripts of the 1916 class whose enrolment has been completed. According to the present law, the 1916 class should not be incorporated in the army until October, 1916. The authorization of parliament was therefore necessary to permit an anticipation of the period of enrolment by eighteen months. It will be unanimously granted by the two chambers, after which the minister of war has promised to make considerable improvements in the clothing, bedding, lodging and food of the young soldiers, the greater number of whom are not yet 19 years old, and should, therefore, be given the best of care. The commission of public hygiene has drawn up a practical program which has been approved by the minister, according to which the food is to be more abundant, the barracks and cantonments are to be approved by the sanitary commission and kept perfectly clean, while each man is to be furnished a complete outfit of bedding and an ample supply of inner and outer clothing. Saturday is to be devoted to hygienic measures. Training is to begin gradually in order to avoid overexhaustion and its disastrous consequences. By means of scrupulous observance of these conditions it is expected that bad consequences of the early enrolment of the young men of 1916 class may be avoided.

THE ACTIVITY OF THE THREE SOCIETIES OF THE FRENCH RED CROSS

The central office of the charitable organizations has just published a book entitled "Paris charitable pendant la guerre." From this book, some interesting figures may be taken which show the activity of the French Red Cross. This comprises three organizations: the Société française de secours aux blessés militaires, which was founded in 1864 and which for a long time was the only one to bear the name of Red Cross; the Association des Dames françaises, founded in 1879 and the Union des Femmes de France, which dates from 1881.

The Société française de secours aux blessés militaires has 7,600 nurses; it maintains twenty establishments in Paris, one for each arrondissement; ninety-three first aid posts with 1,500 beds, attached to the sixth and twentieth army corps; eighty-nine railway station infirmaries; thirty-five railway station canteens; 773 auxiliary hospitals with a total of 56,579 beds; the Elizabeth Hospital at Calais, offered by the society to the king of the Belgians; sixty-five workshops; a war prisoners' bureau; work for supplying clothes for the prisoners of war; a refugees' wardrobe; thirty-two automobiles and seven horse-drawn vehicles for transporting the wounded; a hospital school; a convalescent home for officers, and work in aid of colonial and legionary soldiers.

The Association des Dames françaises has three establishments in Paris; 368 auxiliary hospitals with a total of 18,000 beds in France; a hospital school; twenty workshops within the limits of the military government of Paris; fifty railway station canteens; a bureau supplying information with regard to wounded and prisoners; forty automobiles for transporting the wounded, etc.

The Union des Femmes de France has twenty establishments in Paris; 420 auxiliary hospitals in France, eighty-eight within the territory of the military government of Paris, with a total of 28,000 beds; a hospital school; seventeen railway station canteens; seventeen workshops; automobiles and Lemaitre apparatus for the transportation of wounded; four ambulance boats for the transportation of the wounded by water; two ambulance boats offered by the Danish colony of Paris; one ambulance boat offered by the French colony at Petrograd; a service for furnishing information with regard to the wounded and missing; convalescent homes; soldiers' clubs; arrangements for distributing coffee and other hot drinks to the soldiers in the principal railway stations, etc.

To the services of the French Red Cross must be added those of the British, Japanese and South African Red Cross, the American medical relief work and four hospitals organized in Paris by the Italian, Greek and Swedish colonies. The generosity of the Americans should be particularly mentioned; they have endowed at least nine institutions within the limits of Paris. From Canada have come large amounts of money and more than 100,000 pieces of clothing for the people of the invaded territories. The city of New York has sent more than 2,000,000 francs ($400,000).

NERVOUS TROUBLES AMONG THE WOUNDED

The Société de neurologie de Paris has sent the minister of war a letter calling attention to the fact that men affected with nervous troubles are ordinarily sent to the special neurologic services too late. To take examples from among the most common wounds of war, in cases of lesions of the nerves by bails or fragments of shell, which are very numerous, it is essential that the possibility of operation and its character should be determined as soon as possible. This is a point which cannot be decided without a very minute neurologic examination, requiring not only particular training but also the use of instruments with which most ambulances are not provided. Among the greater number of patients affected with traumatic neuritis and sent to the neurologic services long after the onset of the symptoms, fibrotendinous retractions and subankyloses have developed and persisted in spite of treatment and in some cases have been incurable. Especially to be deprecated is the prolonged sojourn in unsuitable environments of patients affected with hysteric troubles—hysterotraumatism, traumatic neuroses and troubles due to suggestion. Then there are also the simulators, who can be best distinguished by a neurologist. Observation shows that hysteric disorders disappear very rapidly when they are properly diagnosed and treated by psychotherapy and countersuggestion at their inception. They may, on the other hand, be very refractory to treatment when, having been wrongly diagnosed at first, they have been fostered by the sympathy of companions, etc. There is no exaggeration in saying that there are now in the ambulances and military hospitals thousands of men

of this class who, if properly treated, should have been able to return to their posts of duty long since.

Therefore the Société de neurologie de Paris believes that all patients who are or appear to be affected with nervous troubles, organic or nonorganic, ought to be sent, as soon as possible, to the neurologic services. Moreover, for those patients whose abnormal condition persists in spite of treatment and in whom exaggeration or simulation may be suspected, special services for medical oversight and discipline should be organized.

TREATMENT OF WOUNDS OF WAR BY THE DANYSZ METHOD

In a previous letter (THE JOURNAL, Feb. 20, 1915, p. 677), I mentioned the method advocated by Dr. J. Danysz, which consists of treating wounds by extremely dilute solutions of silver nitrate. At one of the last sessions of the Société de médecine de Paris, Dr. Maurice Cazin reported a series of cases in which he obtained by this method excellent results from the point of view both of very rapid disinfection and of intensive proliferation of the tissue ending in a relatively short time in complete repair of very extensive loss of substance. The researches of Danysz have shown that to produce a sufficiently bactericidal action without injury to the tissues, silver nitrate should be employed in 1 : 200,000 solution at first, which may be reduced in strength little by little to 1 : 500,000. Cazin has treated by this method large articular infected wounds, open fractures also much infected, great losses of substance in the soft parts and in all cases he has observed, suppuration has been rapidly checked while reparative proliferation of the tissues has occurred with surprising activity.

NECESSITY FOR ANTITETANIC TREATMENT IN CASES OF FREEZING

Dr. Péraire, assistant surgeon at the Rothschild Hospital, has reported to the Société de médecine de Paris two cases of tetanus following freezing in which there had been no firearm wound. He believes that in any case of freezing, injections of antitetanic serum should be used. Dr. Cazin likewise advocates this measure and Dr. Butte uses antitetanic serum for cases of simple pyodermitis and has never observed any undesirable complications.

BERLIN LETTER

BERLIN, March 15, 1915.

Personal

March 6, Prof. H. Fischer, formerly director of the Breslau surgical clinic, celebrated the sixtieth anniversary of his doctorate. Fischer is 84.

The War

CARE OF THE WAR INVALIDS

Extensive organized efforts are being put forth in behalf of the invalids of the war both in a medical and in a social way. The provisions which have been made by the government of Bavaria for such care are of great interest and may serve as a model. The official publication with reference to this measure is substantially as follows:

1. Hospital treatment. Treatment in the hospitals constitutes the first important point in the preservation of earning power. According to the orders of the military authorities, not only must the wounded and sick be treated medically until the best possible recovery is secured, but also special provision must be made by mechanical and orthopedic treatment, baths, etc., to secure the greatest possible power to use the deformed or diseased limb. The military authorities also furnish the injured with artificial limbs necessary for the movement and balance of the lacking parts of the body. Also the preservation and renewal of the artificial limbs is undertaken by the military authorities.

2. Advice as to occupation. (*a*) This hospital care in the case of many invalids needs for its success an accompanying spiritual influence on the invalid. The wounded and sick must be convinced of the fact which they are at first unwilling even to believe, namely, that the present condition of medical skill scarcely allows such a thing as crippling, and that those severely deformed, as a rule, can be made again able to earn a living, if they themselves only have the will to do so. The naval authorities have assigned to the appropriate service stations an important task to assume in this matter. But the association of other agencies in many cases cannot be avoided on account of the necessity of treating each individual case entirely on its own merits. (*b*) Such cooperation is especially necessary in regard to advice as to occupation. This also must, as far as possible, begin already in the hospital with the advice of the physician as a friend. Its aim must be, as far as possible, to retain the wounded and sick for their former occupation and to preserve for them the conditions of their homes. The medical opinion of the physician, especially of the orthopedic specialist, regarding the degree of strength and capability that can be again secured, must furnish the basis for this advice. In most cases this aim can be reached. If a change of occupation is unavoidable, the choice of a related trade should be secured which the invalid can take back to his home and his former relations. (*c*) The selection of the trade adviser is the function of the local committee. He combines with the head physician of the hospital what is necessary for the regular admission of the wounded. In the selection it is essential to consider the purpose. Those especially adapted for this office are physicians who are accustomed to give opinion on the fitness of patients for work, and who possess an insight into the requirements of industrial life, particularly such doctors as the confidential physicians of the industrial insurance societies, men of practical professional life and officials of intelligence offices who have a special acquaintance with the industrial situation, the fellow tradesmen of the wounded, the representatives of their labor unions, who enjoy their confidence, the teachers of trade schools and employers who can judge of the fitness of the wounded for a trade. A collective action is desirable. Moreover, ministers will gladly favor and aid in giving such advice.

3. (*a*) Trade instruction. The selection of a trade must be followed by care to secure special fitness for the trade. Even this, so far as possible, must begin in the hospital. For this purpose, workshops for instruction in the trade must be arranged in the hospitals or in close connection with them, and definite exercises in the trade must be provided. (*b*) So far as extended treatment in the hospitals is not adapted to make the wounded fit again for his trade, opportunity for further instruction in the trade must be given to them after dismissal from the hospital. For this purpose, courses of instruction in institutes for cripples and invalids in professional schools and manual training courses, and in connection industry and trade must be provided. Especially our industrial firms, according to assurances given by their distinguished representatives feeling the responsibility as the result of the rich experience which they have acquired in the trade schools, will provide courses of instruction for the wounded, especially for their former employees. In this way, though injured by the war, they will be employed as much as possible in their own homes or in the neighborhood of their homes in preparation for their return to the old relations. (*c*) So far as instruction outside of a hospital can be carried on in connection with curative treatment, according to the provisions of the imperial insurance, the institutions of the national insurance societies will undertake and assist it. (*d*) Corresponding to the requirements of practical life, opportunity will also be given those who have taken part in the war and who are limited in their earning power to secure further instruction; and the military authorities particularly, are instituting courses of instruction in left-handed writing for those who are compelled to use the left hand as a result of the loss or crippling of the right. Persons who have become blind will be instructed by the instructors of the royal national institute for the blind. For the deaf, or such as have been severely injured in the hearing organ, it is proposed to establish courses by the special government teachers.

4. Furnishing employment. (*a*) The care described is for the purpose of reestablishing the invalids again in their industrial life and putting them into orderly relations. It must therefore accompany the individual in cases in which he cannot help himself from the hospital until he has secured an independent place of work. The agencies for advice as to trade and for instruction in a trade must, in all things, tend to this end. Especially, they should, during the stay in the hospital, apply to the former employer of the invalid to secure him a place in his old business. Where this is not possible, the invalid or his adviser must look to securing a position. (*b*) In general, the furnishing of new work should endeavor to place the invalid in the neighborhood to which he was formerly accustomed, to bring him to his home town in which he will find connections and support. Particularly invalids from the country should, as far as possible, be returned thither not only because the value of money is higher than in the city, but particularly that they may find a settled residence in their old home. For the collective furnishing of employment there is associated with the public intelligence office in every district a special intelligence office for war invalids which is to serve as the chief agency

for furnishing employment for that district. In case of necessity, other intelligence offices of the same sort will be provided for smaller districts.

5. Institutional care. From comprehensive medical and social care, it may be hoped that the number of invalids who must be dismissed from economic life and who need care in institutions will be very small. For these persons, in the first place, the already existing arrangements, such as the national insurance sanatoriums and the endowed houses, and the hospitals in the neighborhood of the home of the invalids come into consideration. Also in institutional care an effort must be made that the invalids will be furnished as far as possible with suitable occupation.

6. The agents in the care. The care for invalids is a function of the entire community, primarily of the empire and of the state. For this reason and to exclude dissipation of energy, it is to be instituted by the state and controlled by it. (*a*) For larger cities and in addition for other suitable places with hospitals, the president of the officials of the district government calls together a local committee for the care of war invalids. To the local committee belongs the function of carrying out the care immediately. It employs suitable voluntary helpers for advice as to trade and for instruction in trades, unites with the head physicians of the hospitals in the establishment of this care, and in connection with the intelligence offices provides, as far as possible, for the furnishing of employment. The local committee extends, so far as necessary, its care to the home of the invalid, with the purpose of making the soldier as soon as possible again an independent, self-responsible, self-supporting man. According to circumstances, the war invalids may be provided for this purpose with the means for business and the like. In every government district, the president of the government carries on this business. He is assisted by a district committee for the care of war invalids. This includes the representatives of the military authorities, a delegate of the national insurance institution and of the district committee of the Bavarian National Association of the Red Cross, and representatives chosen by the provincial president of the Soldiers' and Veterans' Association for the Care of Cripples, of the communes, of the officers of the intelligence offices, of employers, of the most important branches of trade of the workmen, and other suitable persons. The provincial president institutes the general measures for executing the plan with the advice of the district committee. The oversight of the hospital treatment and the execution of the associated measures of the military authorities is exercised immediately by the sanitary officials subordinated to the head physicians and by the board of management provided by the authorities of the hospital. In other matters, the supervision of the care for war invalids is assumed by the state secretary of the interior in conjunction with the department of war. He is furnished with a national advisory committee for the care of war invalids. Inasmuch as this concerns a task of public social and patriotic philanthropy, the means, for the most part, are assured by the empire and by the state. In addition, the national insurance societies furnish means. The necessity is widely felt of giving expression by voluntary contributions to the thankfulness which we owe to our navy and especially to the wounded. The matter of the care of the war invalids is not completed by the fulfilling of a public social duty. The combination of agencies and the possibility of an energetic comprehensive care require much more that such voluntary contribution should be provided.

Marriages

William Crooks Thro, M.D., New York City, to Miss Alice Prendergast Simmons of North Chelmsford, Mass., March 27.

Clarence H. Hall, M.D., Cherokee, Ia., to Miss Lucille Payne of Lake Andes, S. Dak., at St. Paul, Minn., March 18.

Benjamin Jablons, M.D., to Miss Audrey Frances Jakobi, both of New York City, in Paris, France, March 9.

William Weber Kelly, M.D., Green Bay, Wis., to Miss Ida M. Madeau of Marinette, Wis., April 5.

Luther Davis, M.D., Deeson, Miss., to Miss Sady Lee Yates of Dublin, Miss., March 28.

Robert Taylor Williams, M.D., Detroit, to Miss Ethel Wheeler of Detroit, recently.

Deaths

Julius Mount Bleyer, M.D. Bellevue Hospital Medical College, 1883; well known as a specialist on electrotherapeutics and diseases of the nose, throat and lungs in New York City; once vice-president of the American Congress on Tuberculosis, who when a member of the New York Medico-Legal Society's committee to obtain the adoption of a new system for ending the lives of criminals, devised the death chair for electrocution which is now used in many states; consulting specialist on throat diseases for the Metropolitan Opera Company since 1888; died at his home in New York City, April 3, aged 55.

Benjamin F. Sturgis, M.D. Medical School of Maine, Brunswick, 1862; a Fellow of the American Medical Association, and once president of the Maine Medical Association; assistant surgeon of the Ninteenth Maine Volunteer Infantry during the Civil War; visiting surgeon to the Central Maine General Hospital; a member of the Maine House of Representatives in 1874-1875, and the two following years a member of the state senate and again a member of the house of representatives in 1913; in 1884 and 1885 mayor of Auburn, Maine; died at his home in that city, March 31, aged 77.

Ernest Pendleton Magruder, M.D. George Washington University, Washington, D. C., 1902; clinical professor of surgery in his alma mater; formerly a Fellow of the American Medical Association; a member of the Medical Society of the District of Columbia and of the Washington (D. C.) Surgical Society; at one time on duty on the staff of the Emergency Hospital, Washington, D. C., who went to Serbia by way of Petras, Greece, sailing on Nov. 21, 1914, as director of American Red Cross Unit No. 3; died in Serbia, April 9, from typhus fever, aged 39.

Edith Jane Claypole, M.D. University of Southern California, Los Angeles, 1904; a Fellow of the American Medical Association; and a member of the American Association of Pathology and Bacteriology; research associate in pathology in the University of California, Berkeley; well known as a teacher and investigator in biology and during recent years for her work on the differentiation of streptothrix infections in human beings and on immunization against typhoid fever; died in Berkeley, March 27, aged 45.

William H. Randle, M.D. Jefferson Medical College, 1878; formerly a member of the Medical Society of the State of Pennsylvania; a member of the federal commission to study and combat yellow fever in the southern states in 1878; a practitioner of Germantown, Philadelphia, for many years; and a member of the staff of the Jewish Hospital, Philadelphia; a sufferer from diabetes for a long time; died in the Jewish Hospital, April 2, a week after a mastoid operation, aged 62.

James Eugene McGourty, M.D. Harvard Medical School, 1896; a member of the Association of Military Surgeons of the United States; formerly surgeon of the Ninth Infantry, M. V. M., and a practitioner of Worcester and Lynn, Mass.; for the last three years a surgeon on board Harburg-American steamships, on the New York-Hamburg and New York-Puerto Rico services; died in the Flower Hospital, New York City, March 28, from pneumonia, aged 42.

Joshua Stevens Blanchard, M.D. University of Michigan, Ann Arbor, 1881; a Fellow of the American Medical Association and since 1908 secretary of the Buffalo County (Neb.) Medical Society; formerly a practitioner of Parma, Albion and Jackson, Mich., but since 1902 a specialist on diseases of the eye, ear, nose and throat of Kearney, Neb.; died at his home in that city, March 27, from cerebral hemorrhage, aged 58.

Laura A. Linton, M.D. University of Minnesota, Minneapolis, 1900; for fifteen years a member of the staff of the Rochester (Minn.) State Hospital; at the time of her death second assistant superintendent and in charge of the women's ward; one of the heads of the Minnesota State Training School for Nurses; died at her home in Rochester, April 2.

Henry F. D. Bruhns, M.D. University of Berlin, Germany, 1870; a resident of Lead, S. Dak., for more than thirty years, and at one time a member of the staff of the Homestake Hospital; while returning to his home, Dec. 24, 1914, lost his way, fell into a prospect hole and died from exposure, aged 74.

John H. Jenness, M.D. University of Maryland, Baltimore, 1887; a Fellow of the American Medical Association; for several years school commissioner for Cecil County, Md.;

a member of the Maryland Legislature in 1898; died at his home in Rising Sun, Md., March 29, from pneumonia, aged 52.

Frederick Erastus McClellan, M.D. University of Buffalo, N. Y., 1890; a member of the Medical Society of the State of New York and physician to the Thompson Memorial Hospital, Canandaigua, N. Y.; died at his home in Canandaigua, March 27, from heart disease, aged 46.

Frank D. Koonce, Jr., M.D. Southern Medical College, Atlanta, Ga., 1893; formerly assistant physician at the North Carolina State Hospital, Raleigh, but for the last fifteen years a practitioner of Washington, D. C.; died at his home in that city, March 24, from pneumonia, aged 46.

Rachael T. Speakman, M.D. Woman's Medical College of Pennsylvania, Philadelphia, 1861; who retired from practice twenty years ago and has been for the last twelve years resident physician at Wellesley College, Wellesley, Mass.; died in Brookline, Mass., March 30, aged 87.

Henry Randolph Bradley, M.D. University of Alabama, 1896; a member of the Medical Association of the State of Alabama; died at his home in Elba, February 10. At a meeting of the Coffee County Medical Society, March 11, resolutions of respect and regret were adopted.

Angus Noble, M.D. Jefferson Medical College, 1868; a member of the Association of Surgeons of the Pennsylvania Lines; for twenty-four years surgeon for the Pennsylvania system, at Wellsville, Ohio; died at his home in that city, March 30, from pneumonia, aged 74.

James R. Clouston, M.D. McGill University, Montreal, 1888; for twenty-three years coroner of Huntingdon County, Que.; for many years a member of the Huntingdon School Board; a well-known temperance advocate; died at his home in Huntingdon, March 29, aged 57.

Landreth W. Thompson, M.D. Hahnemann Medical College, Philadelphia, 1887; formerly professor of emergencies in his alma mater; surgeon to St. Luke's and Children's Homeopathic hospitals, Philadelphia; died at his home in Philadelphia, March 31, aged 51.

Thomas Edsmond Sheffield, M.D. Medical College of Georgia, Augusta, 1902; a member of the Medical Association of Georgia; was shot and killed by his wife near his office in Blakely, Ga., aged 38. Jealously is believed to have been the motive for the tragedy.

John Mutius Gaines, M.D. Jefferson Medical College, 1860; surgeon in the Confederate service during the Civil War and for many years a practitioner of Washington County, Md.; died at his home in Hagerstown, Md., March 27, aged 77.

Charles Warren Johnson, M.D. Jefferson Medical College, 1872; for nearly thirty years a practitioner of Litchfield, Ill., and for many years health officer of that city; died at his home, January 28, from cerebral hemorrhage, aged 66.

James A. Modesitt, M.D. Medical College of Indiana, Indianapolis, 1879; a practitioner of Clay County, Ind., since 1873; for the last two years a resident of Terre Haute, Ind.; died at his home in that city, March 30, aged 70.

Judson Elam Hair, Jr., M.D. University of Maryland, Baltimore, 1912; of Greenville, S. C.; who had been living in Tucson, Ariz., on account of tuberculosis; died at Mobile, Ala., while on his way home, March 26, aged 26.

Lewis E. Safley, M.D. College of Physicians and Surgeons, Chicago, 1885; well known as a practitioner and big game hunter of Montana; died at his home in Livingston, Mont., March 27, from arteriosclerosis, aged 53.

Francis M. Beals, M.D. Eclectic Medical Institute, Cincinnati, 1879; chairman of the Board of Health of Mattoon, Ill., and a member of the staff of the Mattoon Hospital; died at his home in that city, March 31, aged 62.

James O. A. Pipkin, M.D. Tulane University, New Orleans, 1869; for many years a practitioner and druggist of Waco, Tex., and for several years physician of McLennan County; died in Lancaster, Tex., March 20.

William Brooks Bigler, M.D. Jefferson Medical College, 1865; an honorary member of the Hillsboro County Medical Society, Tampa, Fla.; died at his home in Dallastown, Pa., April 1, from senile debility, aged 81.

John Robert Barnett, M.D. Rush Medical College, 1881; formerly of Lincoln and Peoria, Ill., but more recently a resident of Imboden, Ark.; died in Peoria, March 29.

M. P. Alexander, M.D. Eclectic Medical Institute, Cincinnati, 1859; died at his home in Maysville, Ga., March 17, from pneumonia, aged 85.

William R. Stavely, M.D. Jefferson Medical College, 1855; formerly local surgeon for the Pennsylvania system at Lahaska, Pa.; died at his home near Lahaska, March 29, from senile debility, aged 83.

Robert J. Rivers, M.D. Hospital College of Medicine, Louisville, 1902; formerly city physician of Paducah, Ky.; died in Hopkinsville, Ky., about March 28, from disease of the gallbladder, aged 34.

Harney Upshaw, M.D. Charity Hospital Medical College, New Orleans, 1875; formerly a member of the State Medical Association of Texas; died at his home in Somerville, Tex., March 29, aged 69.

Frederick H. Mersfelder, M.D. Cleveland Homeopathic Medical College, 1904; also a clergyman of the United Brethren denomination; died at his home in Canal Dover, Ohio, January 31.

Alois B. Shelton, M.D. Eclectic Medical Institute, Cincinnati, 1889; a member of the Kentucky State Medical Association; died at his home in Boydsville, Ky., March 25, aged 71.

Rudolph F. Erdmann, M.D. Miami Medical College, Cincinnati, 1870; a practitioner of New Richmond, Ohio, since 1887; died at his home in that place, February 8, aged 68.

Joseph N. Hannaford, M.D. Rush Medical College, 1871; for nearly thirty years a practitioner of Marion, Kan.; died at his home in Mt. Vernon, Wash., March 13, aged 78.

Frederick R. Mosher, M.D. Wisconsin College of Physicians and Surgeon, Milwaukee, 1898; died at his home in Milwaukee, March 29, from tuberculosis, aged 44.

Eugene M. Legg (license, Texas, Eclectic State Board, 1906), a Fellow of the American Medical Association; died at his home in Abernathy, Tex., March 7, aged 36.

Frank Constant Manchester, M.D. Dartmouth Medical School, Hanover, N. H., 1885; died at his home in Grafton, N. H., January 28, from influenza, aged 53.

George Henry Furbeck, M.D. Long Island College Hospital, Brooklyn, 1895; formerly of Cohoes, N. Y.; died at his home in Denver, Colo., January 27, aged 43.

Albert Z. Buchen, M.D. College of Physicians and Surgeons, Baltimore, 1876; died at his home in Hanover, Pa., March 24, from pleuropneumonia, aged 64.

M. Rudolf Collison, M.D. Pulte Medical College, Cincinnati, 1881; of Oklahoma City, Okla.; died at his home, February 22, from pneumonia, aged 65.

William B. Doane, M.D. Eclectic Medical Institute, Cincinnati, 1882; a veteran of the Civil War; died at his home in Amelia, Ohio, Dec. 13, 1914, aged 77.

Hugh Upton, M.D. Fort Wayne College of Medicine, Fort Wayne, Ind., 1889; of Upper Lake, Cal.; died in Kelseyville, Cal., March 13, aged 75.

Robert K. Dixon, M.D. Georgia College of Eclectic Medical Surgery, Atlanta, 1908; died at his home in Fayetteville, Ga., January 27, aged 30.

James Vance Kinyoun, M.D. St. Louis College of Physicians and Surgeons, 1892; died at his home in Kansas City, Mo., March 31, aged 51.

David A. Sayre, M.D. Starling Medical College, Columbus, Ohio, 1892; died in his office in New Haven, W. Va., March 27, aged 53.

Thomas Alfred Amos, M.D. Trinity Medical College, Toronto, 1882; died at his home in Exeter, Ont., March 25, from pneumonia.

Jerome Charles Marion Chaffee (license, Illinois, 1896), a practitioner for forty-six years; died at his home in Chicago, April 1, aged 69.

William L. Bolon, M.D. Columbus (Ohio) Medical College, 1879; died at his home in Cumberland, Ohio, Dec. 14, 1914, aged 56.

Joseph Walton (license, Ohio, 1896) of Newark, Ohio; died in the Newark Sanitarium, March 24, from pneumonia, aged 85.

George Veitch, M.D. Trinity Medical College, Toronto, 1885; died at his home in Port Elgin, Ont., March 18, aged 55.

Frank B. Stallsworth, M.D. University of Alabama, Mobile, 1899; died at his home in Cuba, Ala., January 2.

John H. Williams, M.D. Jefferson Medical College, 1893; died at his home in Philadelphia, March 15, aged 44.

Cyrus E. Heywood, M.D. Rush Medical College, 1868; died at his home in Casey, Ill., March 21, aged 71.

The Propaganda for Reform

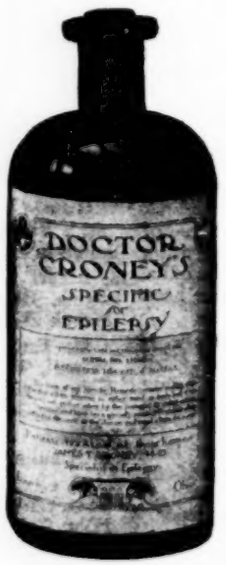
IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

DR. CRONEY'S SPECIFIC FOR EPILEPSY

A Fraudulent Epilepsy Cure Exploited from Columbus, Ohio

Dr. James T. Croney of Columbus, Ohio, calls himself a "specialist" in epilepsy. His specialty is of the mail-order variety, and he treats patients he never sees, for conditions that are self-diagnosed. So far as can be ascertained from the records, Croney was never graduated by a medical college. He was licensed to practice in Ohio in 1896, under the law passed in that year, which permitted non-graduates who had practiced a certain number of years to register. At the time of licensing he was classified as an eclectic, as he claimed to have attended the Eclectic Medical College, Cincinnati, for four months in 1871.

"I have, perhaps, the most positive method ever devised for the permanent cure of Epilepsy," says Croney, with all the easy assurance of quackery. With glib self-glorification, he has declared: "My record is a patient restored to health in every case where my treatment was followed as prescribed."



Croney obtains his "sucker list" by writing to the mayors of small towns and also to the local agents of express companies asking them to furnish the names of sufferers from epilepsy in their neighborhoods. He also incloses with his requests a printed slip emphasizing the fact that he ships his nostrum by express. Having obtained the name, a form-letter prepared so as to resemble a personal communication is sent to the sufferer offering the usual "free trial treatment."

Nor does Croney fail to play on the fears of the sufferers:

"If you could understand fully the terrible results of neglected epilepsy—imbecility or equally fearful complications which may inevitably result—you would write to me to-day—this very moment."

Of the "treatment," Croney says:

". . . the key to my success is due to the fact that I have dissected epilepsy—so to speak—and have prepared a remedy that opposes it at all times."

And what is this "remedy" that, according to its exploiter, "first removes the primary cause of epilepsy and then dispels the secondary causes?" Let the chemists of the Association's Laboratory answer:

CHEMISTS' REPORT[1]

One bottle of "Dr. Croney's Specific for Epilepsy," manufactured by J. T. Croney, Columbus, Ohio, was submitted to the Chemical Laboratory for examination. The bottle contained 980 c.c. (32⅔ fluidounces) of a brown liquid, having extractive matter present. The specific gravity of the liquid at 15.6 C. was 1.1403. Qualitative tests demonstrated a trace of alkaloid, alcohol, ammonia, sodium, potassium, carbonate, chlorid and bromid. A resin was also present. The liquid was distinctly alkaline. Quantitative determinations yielded the following:

Alcohol (by volume)	3.70 per cent.
Ammonia (NH_3) (by weight)	0.46 per cent.
Potassium (K^+) (by weight)	5.02 per cent.
Sodium (Na^+) (by weight)	0.04 per cent.
Carbonate ($CO_3^=$) (by weight)	0.98 per cent.
Bromid (Br^-) (by weight)	10.91 per cent.
Chlorid (Cl^-) (by weight)	0.16 per cent.
Resinous material (by weight)	0.47 per cent.

Essentially each 100 c.c. of the solution contains approximately 3.0 gm. ammonium bromid and 16.1 gm. potassium bromid. Calculating from the bromid determination, each dose, 2 teaspoonfuls (2 fluidrams) contains the equivalent of 16.9 grains potassium bromid, or the daily dose (6 teaspoonfuls) correspond to 50.7 grains potassium bromid.

Shorn of its mystery and secrecy Croney's "cure" for epilepsy, like every other nostrum of its type, stands nakedly exposed as essentially a mixture of bromids. Summarized, the investigation shows that Croney's alleged "Specific for Epilepsy" is not only worthless but a dangerous fraud.

1. This is a condensed report of the chemists' findings. The details of analysis will appear in the Reports of the Chemical Laboratory of the American Medical Association for 1915.

[CONTRIBUTION FROM THE CHEMICAL LABORATORY OF THE AMERICAN MEDICAL ASSOCIATION]

THE QUALITY OF COMMERCIAL BLAUD'S PILLS

L. E. Warren, Ph.C., B.S.

In view of the known instability of ferrous salts, it has been generally held that pills of ferrous carbonate U. S. P. (Pilulae Ferri Carbonatis, U. S. P.), commonly known as Blaud's pills, are unstable. Thus, the U. S. Pharmacopeia directs that they shall be freshly prepared when wanted. Pharmaceutic manufacturing houses, evidently holding this requirement to be unnecessary, almost universally sell ready-made Blaud's pills. On the other hand, some firms sell special forms of the preparation with claims of keeping qualities superior to the ordinary pill. Nevertheless, it was recently pointed out[1] that a proprietary brand of Blaud's pill, which the manufacturer claimed to be greatly superior in keeping quality to the ordinary Blaud's pill, and an ordinary commercial specimen, were each of good quality. To determine whether there is justification for the sale of ready made Blaud's pills, and to determine whether the existence of special forms of Blaud's pills is warranted, an examination of the principal market brands was undertaken. Twelve freshly purchased specimens were examined, together with a specimen of each of three brands which were known to be several years old. Three specimens of the freshly purchased pills were what the manufacturers called "soft mass" pills.

Some of the claims made for the "soft mass" pills are:

". . . present advantage of being rapidly soluble and disintegrating in the stomach and intestinal tract. . . . Under proper storage conditions they retain their soft consistency and shape perfectly."

"They disintegrate or dissolve readily in the digestive tract.

"They keep well, i. e., do not lose strength under proper conditions of storage.

"They show little tendency to become hard when kept under reasonable conditions.

"They are strictly true to formula."

The "soft mass" pills were "chocolate-coated." The remainder, except where stated to the contrary, were gelatin-coated. Three of the specimens (one of which was old) were not claimed to have been prepared according to the U. S. P. formula, but in general were claimed to contain the ingredients from which ferrous carbonate is produced, so that after ingestion ferrous carbonate in the "nascent" state would be formed in the alimentary tract. A number of the specimens were proprietary. These included Frosst's Blaud Capsules; Laminoids Ferruginous (nascent) Schieffelin; Laminoids Blaud (a specimen known to be at least seven years old) Schieffelin; Ferruginous Blaud, Upjohn (one of the "nascent" preparations), and two specimens of tabloids (one of which was old). The laminoids were uncoated. The tabloids were sugar-coated. With one exception all of the preparations were stated to contain 5 grains of Blaud's mass, which is equivalent to about 1 grain of ferrous carbonate. This one was a specimen of Tabloids Blaud Pill and Aloin which was known to be at least six and one-half years old. One specimen of gelatin-coated Blaud's pills (Parke, Davis

1. Queries and Minor Notes, THE JOURNAL A. M. A., Oct. 1, 1914, p. 1315.

& Co.) also was known to be at least six and one-half years old.

Concerning Frosst's Blaud capsules, the following claims were made:

"Blaud capsules 'Frosst' represent freshly precipitated Ferrous Carbonate of a high percentage of purity, deprived of moisture and incorporated with Castor Oil that it may be readily incapsulated in a freely soluble gelatine covering. The capsules do not harden with age nor the contents oxidize."

The cost of Frosst's Blaud capsules was nearly twice that of any other brand of Blaud's pills examined.

The following statements were made concerning Laminoids:

"The Laminoids (Ferruginous, Nascent) consist of two lamina, one of ferrous sulphate and the other of sodium bicarbonate, united by pressure. When brought in contact with water or the fluids of the stomach, chemical action at once takes place, producing fresh ferrous carbonate with the accompanying salts. An excess of carbonate is present to neutralize the acid in the stomach.

"In Laminoids (Ferruginous, Nascent) the physician will find an absolutely reliable means of administering Blaud's formula, without the possibility of the efficiency of this time-tried remedy being impaired by oxidation and the formation of more or less inert material."

The total iron content in the several preparations was determined gravimetrically, and the amount of ferrous carbonate determined by titration. In order to obtain information as to the variation among the individual pills, the assays for ferrous carbonate were made on three pills taken together and on each of three pills taken singly, or four assays in all. The average was then obtained by dividing by six. In some instances, additional assays were made. The results in some cases show considerable variation from the claimed amount of medicinal ingredients. In some of the brands the average results found by titration for ferrous carbonate were somewhat higher than those obtained by calculation from the determination of total iron. Evidently this is due to the fact that because of great variation in the weight of individual pills, uniform samples could not be obtained. The total iron content of the real Blaud pills when calculated to ferrous carbonate varied between 77 and 156 per cent. of the amount claimed, and that of the "nascent" preparation between 88 and 183.2 per cent. of the amount claimed. The determinations of ferrous carbonate did not markedly fall below this, showing that oxidation had not taken place to any considerable extent. The analytic findings are given in the accompanying table.

In order to obtain some information as to the relative disintegrating properties of the several brands of pills, tests were carried out by treating a specimen of each (1 pill) with 90 c.c. of 0.2 per cent. hydrochloric acid at ordinary temperature in a 100 c.c. Erlenmeyer flask, and agitating the mixture by inverting once every ten minutes. This process was continued until the pill had become disintegrated, or until the experiment had continued for nine hours. In a second series of tests at the end of six hours, the acid was removed from such of the pills as had not become completely disintegrated, and 90 c.c. of a 1 per cent. solution of sodium carbonate substituted. The digestion was then continued as described above until the pill had become completely disintegrated, or until a period of six hours had elapsed. Although the disintegration would undoubtedly have taken place more rapidly at a temperature of 37 C. and possibly faster in a weak pepsin solution, it is believed that for comparative purposes the results obtained are sufficient.

The results not only showed great variation among the several brands, but also considerable variation among the several pills of the same brand. The Laminoids disintegrated the most readily, but these were not coated. The next in order were the Parke, Davis & Co. brand of soft mass pills and the Sharp & Dohme brand of soft mass pills. It should be noted that the Lilly brand of soft mass pills disintegrated more slowly than the ordinary kind from that firm. The results are given in the table.

TABLE SHOWING QUALITY OF COMMERCIAL BLAUD'S PILLS

Product	Manufacturer	Claims; Composition	Ferrous Carbonate Calculated from Determination of Total Iron. Per Cent. of Claim	Ferrous Carbonate (by Titration of Ferrous Iron) Per Cent. of Claim	Disintegration in Acid Solution (Hours)	Disintegration in Alkaline Solution Following Acid (Hours)
Blaud Capsules	Charles E. Frosst & Co.	5 grains, approximately ½ grain of iron in the ferrous state	77	79.2*	No effect except to dissolve coating	No effect
Blaud Pill	Sharp and Dohme	5 grains U. S. P.	91.8	92.6	6.00 5.00	
Blaud Pill Soft	Sharp and Dohme	5 grains U. S. P.	99.5	96.2	6.00* 3.00 2.00	0.50
Blaud Pill	John Wyeth and Brother	5 grains U. S. P.	114.2	113.9	3.50 2.00 8.50	
Blaud Pill	Eli Lilly & Co.	5 grains U. S. P.	117.7	112.5	6.00 3.50 2.00	
Blaud Pill Soft	Eli Lilly & Co.	5 grains U. S. P.	121.4	120.1	4.00 6.00 7.00	
Ferrous Carbonate (Blaud)	Parke, Davis & Co.	5 grains U. S. P.	117.6	121.3	6.00* 4.50 4.00	1.00
Ferrous Carbonate (Blaud) soft	Parke, Davis & Co.	5 grains U. S P.	156.2	153.9	2.00 2.50	
Ferrous Carbonate (Blaud) (old specimen)	Parke, Davis & Co.	5 grains U. S. P.	142.3	143.7	7.00 6.00*	6.00†
Ferruginous Blaud	Wm. S. Merrell Chemical Co.	5 grains	117.4	105.9	1.00 2.00 3.00	
Ferruginous (Blaud's)	The Upjohn Company	5 grains	183.2	169.5	5.50 8.00 6.00*	4.00
Laminoids Ferruginous (nascent)	Schieffelin & Company	5 grains	121.3	126.4	1.50 2.00	
Laminoids Blaud's (old specimen)	Schieffelin & Company	5 grains	87.7	74.9	1.00 1.00	
Tabloid Blaud Pill	Burroughs, Wellcome & Co.	5 grains	104.3	104.1	7.00† 6.00*	6.00†
Tabloid Blaud Pill and Aloin (old specimen)	Burroughs, Wellcome & Co.	Blaud Pill 4 grains (20% ferrous carbonate); Aloin $\frac{1}{20}$ grain	106.1	113.1	8.50 6.00*	6.00†

* The apparent discrepancies between the amount of ferrous carbonate as calculated from the determination of total iron and that obtained by titration of ferrous carbonate are explained elsewhere in this paper.

† Not completely disintegrated in twenty-four hours.

The results of the examination refute the commonly assumed instability of ready-made Blaud's pills. On the other hand, it is seen that the Blaud's pills of the market are not very reliable as to iron content. A range of from 77 to 182 per cent. of the claimed amount of ferrous carbonate denotes carelessness in manufacturing or lack of proper analytic control over the finished product. Further, the examination demonstrates that the "nascent" preparations, the soft mass pills, and the gelatin encapsulated oily suspension show no advantage over the ordinary kinds. In view of the findings, physicians should consider the advisability of directing the pharmacist to prepare Blaud's pills according to the U. S. P. whenever they are prescribed.

ARTICLES REFUSED RECOGNITION

Reports of the Council on Pharmacy and Chemistry

Below appears an abstract of the Council's action on an article refused recognition which was not deemed of sufficient importance to require a lengthy report.

Lactobacilline Omitted from N. N. R.

The Franco-American Ferment Company has advised the Council on Pharmacy and Chemistry that, in advertising its products, it will no longer conform to the rules of the Council. This is evident. The Franco-American Ferment Company has distributed circulars in which the public is informed that auto-intoxication is the cause of innumerable ills ranging all the way from arteriosclerosis, rheumatism and gout to chronic headache, odorous perspiration, nervous disorders and melancholia; that the Bulgarian bacillus "is a wonderful corrective or remedy" for all these conditions, and that the Lactobacilline products are the only preparations of Bulgarian bacillus "to be had in America which bear his [Professor Metchnikoff's] personal endorsement"—by inference, the only reliable products. In view of the action of the Franco-American Ferment Company, and of the tendency of their advertising to cause the public to exaggerate slight ailments into alarming conditions, the Council has voted that the several Lactobacilline products of this concern be deleted from New and Nonofficial Remedies.

CONVICTIONS UNDER FOOD AND DRUGS ACT

NEAL'S OLIVINE

Neal's Olivine was a liquid soap put on the market by the To-Kalon Manufacturing Company of Syracuse, N. Y. Under the heading "Important to Physicians and Trained Nurses," the label bore the following claims:

"Neal's Olivine is a thoroughly Antiseptic soap, medicated with chemically pure borax, in the form of boroglycerine. It is of exceptional value in producing surgical cleanliness, unexcelled for removing dirt, softening and whitening the skin, healing chapped hands, and eradicating skin blemishes.

"Neal's Olivine will not injure the most delicate skin.

"Unexcelled for the relief of dandruff, falling hair, and shampooing the scalp."

On a circular that went with the bottle these further claims appeared:

"Olivine contains the pure oil of crushed olives combined with chemically pure borax in the form of boroglycerine.

"It is both an antiseptic and germicide."

A sample of Neal's Olivine was analyzed in the Bureau of Chemistry and the chemists reported that it was not made from olive oil, that it contained no boroglycerin, and that it had neither antiseptic nor germicidal action. On March 20, 1914, the To-Kalon Manufacturing Company pleaded guilty to the charge of misbranding and the court imposed a fine of $20.—[*Notice of Judgment, No. 3522.*]

FRECKELESS

Freckeless was marketed by one John Emmett Barry trading under the firm name of J. E. Barry & Co., Paris, Texas. The stuff was sold "for the removal of Freckles, Tan, Sunburn and other Facial blemishes" and bore the following statements on the trade package.

"The Superior Skin Food and Massage Cream."

"As harmless as it is sure."

When analyzed by the Bureau of Chemistry the chemists reported that Freckeless was an ointment consisting largely of petrolatum (vaseline) with which had been mixed about 10 per cent. of bismuth subnitrate and 12 per cent. ammoniated mercury.

The stuff was declared misbranded because it was not harmless, containing as it did a "harmful, poisonous and deleterious" substance, ammoniated mercury, which as is well known, is a caustic poison. It was further declared misbranded in that it was not a "skin food" and "did not contain any ingredient or combination of ingredients capable of acting as a food for the skin." On Oct. 19, 1914, J. E. Barry pleaded guilty and was fined $10.—[*Notice of Judgment, No. 3540.*]

Correspondence

Ancylostoma, not Ankylostoma

To the Editor:—The Current Comment "Ancylostoma, not Ankylostoma" (The Journal, March, 27, 1915, p. 1081), says: "We do not know what considerations induced the commission to choose the spelling 'ancylostoma,' which apparently also involves a change in pronunciation, but possibly the choice will illustrate the proverb, 'You may lead a horse to water but you cannot make him drink.'" I find that other medical journals have likewise criticized the opinions of the commission. The rules for nomenclature established by the International Commission on Zoological Nomenclature have no bearing on the etymological derivation of a name. It is the duty of the commission to determine the first name applied to a genus or species correctly described. The name does not have to be descriptive; nor does it matter how the name is spelled.

Official names are of great help to scientists; it is only by their use that the various descriptions in various languages are brought to a focus. The fact that an unofficial name has come into wide use in medical literature is no argument against the necessity of official names for scientific work. There is less room for argument here than there is in the action of the committee on revision of the present Pharmacopeia in dropping the name "chloral," which was official and which is widely used in medical writings, and in replacing it with the official name, "chloralum hydratum." I wish you would make it clear to the readers of The Journal that zoological nomenclature is not based on etymological or orthographic rules, and that a name does not have to be descriptive.

The first name published with a correct description is the one that the committee usually selects as the official name.

Dubini in 1843 gave the first description under the name *Agchylostoma duodenale*. Article 25 of the Code provides that the valid name of a genus or species can only be that name under which it was first designated. The name must not have been used previously for some other genus or species. Of course, all names must be Latin or Latinized, or considered and treated as such in case they are not of classic origin. There never was any question about the designation of the species *duodenale*. It is believed that the *g* in *Agchylostoma* was due to a typographical error and, therefore, according to Article 19 of the Code an emendation would be valid. The first emendation was made by Creplin in 1845, who changed *Agchylostoma* to *Ancylostoma*. Article 19 of the Code provides: "The original orthography of a name is to be preserved unless an error of transcription, a *lapsus calami*, or a typographical error is evident."

I believe a similar law of priority should apply to the names in our Pharmacopeia and that we should cease this ever changing of names.

O. V. Huffman, M.D., Albany, N. Y.

To the Editor:—There is at least one serious objection to the adoption of the word "ancylostoma" instead of "ankylostoma," as the International Commission of Zoological Nomenclature has decided. The same objection has held for the word "ceramics," which the dealers who know and the magazine published by that name have for some time past spelled "keramics."

The objection is that the Greek origin calls for a hard "c" or "k" sound in the pronunciation of both words. It is ridiculous to pronounce the name of the worm "ansilostoma," which the new proposal will initiate.

L. K. HIRSHBERG, M.D., Baltimore.

Scholarships for Belgian Students

To the Editor:—There are many Belgian students and professors, young and old, crippled physically and unfit to serve in the army, whose important life work is at a standstill. A committee is actively at work endeavoring to anticipate somewhat the future needs of Belgium during its period of educational reconstruction. To the lovers of equity, and to those who cherish education and admire Belgian integrity and heroism, an opportunity is given to assist in bringing to America worthy intellectual men and women for a temporary free enjoyment of the privileges of American institutions.

This committee has already received assurances from the George Washington University for the instruction of ten students in any of the departments of the University. It is highly probable that the committee will receive from other American institutions similar assurances.

It is proposed to raise a fund at once to defray the traveling expenses to and from Belgium, and the cost of residence in Washington for a period of one year, of the students or research workers, which the George Washington University has already generously provided for. In the case of professors it is hoped that the subscriptions will be sufficiently liberal to provide for honorariums as well, thereby giving all the students in Washington the benefits of lectures by Belgian scholars.

It is estimated that from $20,000 to $25,000 will be needed in the work at once, and in the event of a surplus being accumulated, it is proposed to apply this to the recuperation of educational work in Belgium. This committee is a subcommittee of the Central Committee for the Belgium Relief Fund for women and children and other non-combatants, and it is organized with the approval of the minister from Belgium to the United States. Contributions may be sent to Belgian Scholarship Committee, Washington Loan and Trust Building, Washington, D. C. Checks for any amount, large or small, are earnestly asked for.

NEVIL MONROE HOPKINS, Chairman,
2128 Bancroft Place,
Washington, D. C.

Use of the Continuous Warm Bath

To the Editor:—In the article on "The Tools of Our Trade," by F. X. Dercum (THE JOURNAL, March 13, 1915, p. 878), a view is expressed regarding the "continued warm bath" in treatment of psychoses which does not represent the correct attitude, as I think, toward this means of treatment. Dr. Dercum remarks that "the continued warm bath is also a form of restraint." This is not the opinion or the usage of all. Since 1909, when I observed the *Dauerbäder* as given at Kraepelin's clinic at Munich, where I took the "Fortbildungskursus," I have employed it as a method of treatment only when the patient was entirely willing. Previously I had occasionally used mild compulsion with it. I asked Kraepelin if he ever used compulsion. He replied that he did not—only persuasion, requesting the patient to get in and allowing him to get in and out as he chose, adding that he seldom failed to finally win the full consent of the patient. I am more inclined to call attention to this as I noticed some time ago that the prolonged warm baths were treated as a form of "restraint" in the state institutions of Illinois, and blanks provided to report this form of "restraint" to the state board of administration.

I believe that the method of treating the prolonged warm baths as "voluntary" is the more enlightened one, and that patients with whom force is required to give the bath would as a rule do as well without it if they prove refractory to persuasion, after a thorough, kindly and patient trial of that means. Though there may be exceptions to this statement, I believe it in accord with the best welfare of the greatest number.

RICHARD DEWEY, M.D., Wauwatosa, Wis.

Information Wanted on Inherited Harelip and Cleft Palate

To the Editor:—We are studying the inheritance of harelip and cleft palate. So far we have been unable to obtain data of children when both parents showed one or both of these abnormalities. Information is wanted on the inheritance of harelip and cleft palate in families in which both parents are affected. Descriptions of the abnormalities of both parents are desired, and especially the total number and sex of the children, both normal and abnormal.

S. L. MASON,
D. F. JONES.

Bussey Institution of Harvard University, Forest Hills, Mass.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

INQUIRIES ON THE HARRISON LAW

A FEW SUGGESTIONS

The Vigo County (Ind.) Medical Society, with commendable enterprise, has prepared and distributed to its members a card to hang over the doctor's desk or wherever it can be easily consulted. It contains a number of helpful suggestions which physicians will do well to keep in mind. The card reads:

GET THE HABIT.—Write or have printed your register number—your patient's name and address—your name and address—the date on all your prescriptions. You will find it a good check.

BE CAREFUL when prescribing proprietaries containing narcotics to always use your register number, etc. It will save confusion.

A DRUGGIST cannot accept a prescription containing any narcotic over the phone.

COOPERATION is going to make this law the best ever enacted.

REMEMBER the doctor has everything to gain, the druggist everything to lose, so don't ask him to do anything that is not strictly within the letter of the law.

REMEMBER it is necessary for a doctor to use official order blanks in purchasing H. T. apomorphia, morphin, codein, cocain solution or other narcotics coming under this act.

TO FACILITATE the duties of the inspector, druggists should keep a separate file of all prescriptions coming under this act.

REMEMBER the dispensing doctor must follow all regulations as laid down for the druggist.

TELEPHONE PRESCRIPTIONS

To the Editor:—Is the druggist allowed to take prescriptions over phone, for opiates under Harrison act, and sign the physician's name and register number, or must the prescriptions be in the physician's own handwriting? H. H. NIEHUSS, M.D., El Dorado, Ark.

ANSWER.—The law provides that prescriptions shall be written by the physician, dated on the day on which they are signed and signed by the physician who shall have issued the same. Obviously, prescriptions signed with the physician's name by any one else would not be lawful.

COPY OF PRESCRIPTION NOT REQUIRED

To the Editor:—Is a physician required to keep a copy of his prescriptions for drugs mentioned in the Harrison act?

F. O. YOUNG, M.D., Lexington, Ky.

ANSWER.—No.

QUESTION OF DOUBLE LICENSURE

To the Editor:—1. With reference to the question of P. G. K. (THE JOURNAL, March 27, 1915, p. 1096), suppose he applies for the licenses at different times and gets Nos. 1 and 20, as physician and druggist, respectively. If he carries a medicine case, in order for him to

replenish his supply, is it necessary for him to order the drugs on the regulation blanks as No. 1 to himself as No. 20? Or can he simply take them out of the stock bottles and keep a record of all in his possession collectively?

2. Would the following prescription come under the exemptions? It is used merely to illustrate:

Elix. heroin and terpine hydrate.....
Syr. wild cherry.....
Syr. simple .....āā 1 ounce
M. Sig.: Teaspoonful every three hours.

Elixir of heroin and terpin hydrate contains ⅓ grain of heroin to the ounce, but the whole mixture contains only ⅙ grain to the ounce.

L. H. S., McDaniel, Md.

ANSWER.—1. A physician doing business as a druggist would have to take out a license in each capacity. If he takes drugs out of his stock for his own professional use, he should fill out an order blank for himself as he would do if he were getting the drugs from a druggist, other than himself.

2. Any preparation containing less than 2 grains of opium, one-fourth grain of morphin, one-eighth grain of heroin or 1 grain of codein to the fluidounce is exempt. As prescriptions are required to show only the registry number, the patient's name and address and the physician's signature, it is better and much easier to comply with these conditions in writing all prescriptions, and then one will not need to worry about the exact amount of opiate in each prescription. May we once more emphasize that physicians need not worry about the antinarcotic law, when writing prescriptions, if they will have printed, or write, on their prescription blanks, their registry number; and in addition do what they ought to do always, that is, give the date and name of patient and sign their own name in full.

DEAD SHOT COUGH REMEDY — A DANGEROUS AMYL ACETATE MIXTURE

To the Editor:—I am sending you a one-half ounce vial of Dead Shot Cough Remedy in original package. The person who puts up and peddles this claimed that it contained no alcohol, opium or any harmful drug, and was a sure cure, etc. A party took two doses and complained of suffocation and an enlargement of the blood vessels of the head, blindness, vertigo and afterward a violent headache. Also, another party took 10 drops and complained of a fulness in head and dyspnea—says it feels as if all the blood goes to the head. It seems to have the effects of the nitrites. The label does not declare its contents and the preparation is put up and sold by a layman. Can you examine and report the findings of the contents of this bottle, and whether this is being put up and sold in violation of the "Pure Food and Drugs Act?"

R. L. ALEXANDER, M.D., Jayton, Texas.

ANSWER.—The specimen sent in had an overpowering odor reminding one of fusel oil. In view of its evident potency and the consequent danger liable to result from its promiscuous use, the Chemical Laboratory of the Association was asked to make an examination of the specimen. The following is the report:

The specimen submitted to the laboratory for examination was labeled:

DEAD SHOT COUGH REMEDY

Dead shot for coughs, and colds. Manufactured and sold exclusively by W. F. Martin, Anson, Texas. Dose: From 12 to 15 drops for adults three or four times a day without water. Give children number of drops, according to age.

Tests were made for the presence of such compounds as amyl nitrite and nitroglycerin, either of which might produce the symptoms reported by those using the preparation, but the presence of neither compound could be demonstrated. On evaporating some of the preparation, a small amount of an oily residue was left which from its physical properties was concluded to be kerosene, or a similar petroleum oil.

Compared with a known specimen of amyl acetate as to odor, color, taste, volatility, presence of acetate and reaction with vanillin sulphuric acid reagent, no difference could be detected.

This qualitative examination indicates that the specimen of liquid sent to the laboratory is essentially amyl acetate containing a small amount of kerosene or similar oil.

As to physiologic effects of amyl acetate, Koelsch (*Hyg. Rundschau*, 1913, p. 239) states that it produces coughing, dizziness and severe headache. Fraenkel ("Arzneimittel Synthese," Edition 3, p. 70) states that amyl acetate is very energetic and quick acting, affecting the respiration very markedly and in larger doses having a paralyzing effect on the nerve centers.

These statements show that amyl acetate is an active compound, and some of the symptoms ascribed to it are the same as those reported by Dr. Alexander's patients.

The Food and Drugs Act, commonly called the "Pure Food and Drugs Act," is a federal law and affects only products which are sold in interstate commerce. As the preparation is said to be sold locally only, the federal law does not apply.

LITERATURE ON QUARANTINE AND FUMIGATION

To the Editor:—Please tell me where I can obtain a list of material on quarantine and fumigation.

E. L. MERTZ, M.D., Downers Grove, Ill.

ANSWER.—The following is a list of references on this subject:

Dreyfus, W.: Formaldehyd Fumigation, *Am. Jour. Pub. Health*, November, 1914.

Ford, W. W.: Brief History of Quarantine, *Bull. Johns Hopkins Hosp.*, March, 1914.

Berkowitz, M. E.: Practical Side of Deratization with Flue Gas, THE JOURNAL, Feb. 14, 1914, p. 526.

Public Health, Hospital and Budget Committee of the New York Academy of Medicine: Quarantine in the Maritime Cities of the United States, THE JOURNAL, Jan. 18, 1913, p. 194.

Kerr, J. W.: Procedure in Quarantine Practice, THE JOURNAL, Dec. 7, 1912, p. 2026.

Stone, E. B.: Necessity of Reporting and Quarantining Contagious Diseases, *Vermont State Board of Health Bull.*, September, 1913.

Cruikshank, W. J.: An Abuse of Quarantine—Its Remedy, *Long Island Med. Jour.*, October, 1912.

Policies in the Management of Communicable Diseases, *Florida State Board of Health Bull.*, March, 1912.

Landford, J. S.: The Lesson of Canal Zone Sanitation, *Pop. Sc. Month.*, September, 1913.

Disinfection and Disinfectants, Instructions of the District of Columbia Health Department.

Rankin, W. S.: Quarantine—Its Ineffectiveness in the Past, *North Carolina State Board of Health Bull.*, August, 1913.

What Diseases Should be Quarantined, Editorial, *Rhode Island State Board of Health Bull.*, February, 1914.

Boudeau, F. G.: The Duration of Quarantine in Transmissible Diseases, *Ohio State Board of Health Bull.*, May, 1914.

Gardner and Simonds: Practical Sanitation, St. Louis, C. V. Mosby Company, 1914.

Cofer, L. E.: Maritime Quarantine, Public Health Bulletin 34, Washington, 1910; Quarantine Procedure, Public Health Bulletin 64, Washington, 1914.

ANION AND CATION — NOMENCLATURE

To the Editor:—I have a suggestion for medical nomenclature, namely, the replacement of the words "anion" and "cation" by "cathophobion" and "anophobion," respectively. There is some confusion now because anode means positive pole, whereas anion means a negative ion. My new words retain the root "ano" for positive ions, and the root "catho" for negative ions. Thus, a positive pole is called "anode"; a positive ion, "ano-phob- ('fearing, repelling') ion."

I. F. SHAPIRO, M.D., New York.

ANSWER.—There would be objections to this change. The term "anion" is thoroughly established in chemical as well as medical literature with the meaning, negative ion. It would seem injudicious to attempt to replace a term so long in use by a longer and more complicated one. The meaning of these terms can be easily understood if we remember that anode means the way up and refers to the passage of the electric current. It should be remembered also that positive electrons pass to the negative pole and vice versa; hence, while "anode" means the positive pole, the ions which pass to it are the negative ions. On the other hand, "catho" means down, and refers to the passage of the electric current into the liquid, the cathode being the negative pole. The ions which pass to it are the positive ions. It would, perhaps, create as much confusion to explain that the anophobions are the ions that shun the negative pole as to explain that the negative ions pass to the positive pole.

THE BACCELLI METHOD OF HEROIC TREATMENT

To the Editor:—I read in THE JOURNAL (March 13, 1915, p. 952) an abstract on "Intravenous Injection of Bichlorid of Mercury in Acute Rheumatism." The author used the Baccelli technic. What is this technic? Has this treatment been used successfully by any one in this country?

ARTHUR L. BROWN, M.D., Riverside, Cal.

ANSWER.—Baccelli's technic is given in full in his book entitled "La via delle vene aperta ai medicamenti eroici" (The Administration of Heroic Medicines by Intravenous Injection), Rome, 1907.

The technic is cited by Martone as the intravenous injection of 2 mg. of mercuric chlorid; the next day, 3 mg.; the seventh and eighth days, 4 mg. each day; the ninth, tenth and eleventh days, 5 mg. each day. He says elsewhere, "The dose should range between 1 and 5 mg., never going above

this." He quotes Singer as the first to apply the Baccelli method of intravenous injection of mercuric chlorid in treatment of acute articular rheumatism.

Dal Monto (*Policlinico*, Rome, 1912, xix, 795) reports recovery from severe anthrax after an intravenous injection of 1.6 gm. of a 1 per cent. solution of mercuric chlorid followed two days later with 2 cg.

F. Grandoni reports the cure of nodose erythema after intravenous injection of 2 mg. of mercuric chlorid in 2 c.c. of distilled water.

These citations indicate the outlines of the technic used. No references have been found to the use of the method in this country.

THE DENATURING OF ALCOHOL

To the Editor:—Certain of the druggists of Coos County, Oregon, have decided not to handle alcoholic liquors, and some will not renew their liquor licenses with the Department of Internal Revenue. Of course, those who are not licensed will not be allowed to sell pure alcohol, but may sell denatured alcohol. A drug journal has suggested that alcohol may be denatured by adding to each gallon of alcohol 2 drams of phenol (carbolic acid) and 20 minims of oil of gaultheria. Alcohol denatured after this formula can be used for the sterilization of instruments, and properly diluted, can be employed for sponge baths.

Kindly inform me if this formula has the approval of the Bureau of Chemistry and also whether the druggist who does not hold an internal revenue license could denature alcohol in accordance with a doctor's prescription.

L. G. JOHNSON, M.D., Myrtle Point, Ore.

ANSWER.—"Art. 25. The Commissioner of Internal Revenue will consider any formula for special denaturation that may be substituted by any manufacturer in any art or industry, and will determine (1) whether or not the manufacture in which it is proposed to use the alcohol belongs to a class in which tax-free alcohol withdrawn under the provisions of the law can be used; (2) whether or not it is practicable to permit the use of the proposed denaturant and at the same time properly safeguard the revenue. But one special denaturant will be authorized for the same class of industries, unless it shall be shown that there is good reason for additional special denaturants" (Manufacture of Denatured Alcohol, Bulletin 130, U. S. Department of Agriculture, Bureau of Chemistry). We do not find listed among the formulas approved by the Department of Internal Revenue the one concerning which inquiry is made. No pharmacist can manufacture tax-free alcohol unless he is licensed by the Department of Internal Revenue. In fact, unless a druggist is licensed, he may not include a supply of alcohol in his stock and could not compound a prescription calling for alcohol. The sole purpose of denaturing alcohol is that it may be available "free from tax" and, as is indicated in the foregoing quotation, the licensure for the manufacture and the supervision of the output of a distillery engaged in this manufacture is under the supervision of the Department of Internal Revenue.

CAPITALIZATION OF SCIENTIFIC NAMES

To the Editor:—Will you be good enough to advise me why THE JOURNAL capitalizes the Latin term for Bulgarian bacillus, as follows: "Bacillus lactis bulgaricus" instead of "bacillus lactis Bulgaricus?" I notice that bacteriologists quite generally also use the first style of capitalizing.

The use of the capital for "Bacillus" may be according to German usage; it is, however, so far as I am informed, contrary to English rules, which demand capitals for such nouns only when they are used as titles, and I have always understood it to be correct, when using an adjective derived from a proper name, to capitalize it. In some instances, I have observed that even when the proper name of a person is used as the specific title of an organism, such a specific title is not capitalized.

According to English usage, as I understand it, the term in question, when not used as a title, should be written "bacillus lactis Bulgaricus."

X. Y. Z.

ANSWER.—In capitalizing the word "bacillus" when forming part of a scientific name, THE JOURNAL follows a generally recognized rule, namely, that when the generic and specific names are used together to form the scientific name of an animal or plant, the generic name is capitalized, thus: Streptococcus mucosus, Quercus alba, Musca domestica, Equus caballus. See, for instance, under "genus" in the Century or Standard dictionary.

In writing "bulgaricus" without a capital, THE JOURNAL conforms to a growing tendency in medical literature. It is true that, with few exceptions, ordinary English adjectives derived from proper names are written with capitals; but of late considerable headway has been gained in a tendency to write all adjectives in scientific medical language with small letters: eustachian tube, sylvian fissure, meibomian gland. In conformity with this tendency, Lippincott's, Stedman's and the American Illustrated medical dictionaries write "bulgaricus" with a small letter.

COMBRETUM SUNDIACUM IN THE TREATMENT OF MORPHINISM

To the Editor:—Please inform me as to the employment of the drug known as *Combretum sundiacum* in treatment of morphinism. Is this listed by any of the manufacturing chemists? How can it be obtained?

T. M., Alaska.

ANSWER.—Several years ago *Combretum sundiacum* was vaunted as a Chinese opium cure. Analyses by several chemists have failed to show anything except chlorophyll, gum, tannin, a caoutchouc-like substance, and traces of resin—in short, nothing to which the alleged antinarcotic action could be attributed. Investigation has shown that the method of using combretum by the Chinese is merely an application of the well-known principle of diminishing dosage. The opium habitué mixes his daily dose of opium with a quart of decoction prepared from roasted combretum. At the intervals at which he is accustomed to the narcotic he swallows 3 ounces of the combretum-narcotic mixture and fills the container with combretum decoction which contains no narcotic. It is probable that the tannin in the increasing doses of combretum tends to overcome the tendency to diarrhea caused by the decreasing dosage of opium. It is probable that the decoction of any other tannin-containing, but otherwise comparatively inert, drug would be as efficacious in the cure of the opium habit if used in a similar manner. Combretum is not listed by manufacturing pharmacists and has apparently fallen into disuse.

THE DOSE OF CODEIN FOR COUGH

To the Editor:—In THE JOURNAL, March 6, 1915, p. 811, is a prescription calling for 1/32 grain of codein sulphate to be given to a child 5 years old every two or three hours. Is it possible for any physician to recognize the influence of such a dose on the cough of such a patient? Codein seems to me to be a weak morphin, making the dose equal to about 1/120 grain of morphin.

A. B.

ANSWER.—The sedative influence of this dose of codein could probably be recognized. The average dose of codein is given by the pharmacopeia at one-half grain. The average dose of morphin preparations is placed at one-fourth grain. It is usual in prescriptions for cough to give the anodyne in comparatively small doses. Thus a quite frequent prescription of morphin in cough mixtures is one-sixteenth grain, one-fourth of the average dose. If we follow the same rule with regard to codein, the dose for a cough mixture would be one-eighth grain. The corresponding dose for a child of 5 years would be about one-fourth of the adult dose, which would make a dose of codein, $\frac{1}{32}$ grain. It is wise in prescribing for cough not to give an anodyne in larger doses than is necessary. A better practice, when it is necessary to give an anodyne, is to give it in a separate prescription and regulate the dose according to the apparent need.

BRICKLAYER RHEUMATISM

To the Editor:—In tennis players, trying to acquire a new stroke, and in milkers with hard-milking cows, I have several times encountered a condition resembling Dr. Thornton's "bricklayer rheumatism" (Queries and Minor Notes, THE JOURNAL, April 3, 1913, p. 1182). In all of my cases the right forearm was affected, and auscultation over the tendons while in motion showed it to be a tendosynovitis crepitans. Rest and subcutaneous injection of thiosinamin (or fibrolysin) 10 cg. once a day for three or four days has in my cases always been sufficient to relieve the condition permanently.

SOREN NIELSEN, M.D., Hayward, Cal.

Malaria a Political Disease.—Malaria remains forever in areas it has once invaded. Very malarious places cannot be prosperous. Those who live there are too sickly for hard work, and such localities often end by being deserted by all save a few miserable inhabitants. Malaria is the great enemy of the explorer, the missionary, the planter, the soldier, the administrator, the villager and the poor, and has profoundly modified the world's history by tending to render the whole of the tropics comparatively unsuitable for the full development of civilization. It is essentially a political disease—one which affects the welfare of whole countries.—Ronald Ross, "The Prevention of Malaria."

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Arkansas: Regular, Little Rock, May 11-12. Sec., Dr. W. S. Stewart, Citizens Bank Bldg., Pine Bluff. Homeopathic: Little Rock, May 11. Sec., Dr. Scott C. Runnels, 900 Scott St., Little Rock. Eclectic: Little Rock, May 13. Sec., Dr. C. E. Laws, 712 Garrison Ave., Fort Smith.

Illinois: Chicago, May 13-15. Sec., Dr. C. St. Clair Drake, Springfield, Ill.

Louisiana: Homeopathic, New Orleans, May 3. Pres., Dr. C. R. Mayer, 919 St. Charles St., New Orleans.

Massachusetts: Boston, May 11-13. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.

Michigan: Detroit, May 27-29. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

Nevada: Carson City, May 3. Sec., Dr. S. L. Lee, Carson City.

New York: Albany, Buffalo, New York and Syracuse, May 25-28. Mr. Harlan H. Horner, Chief, Examination Division, State Education Bldg., Albany.

Tennessee: Knoxville, Memphis and Nashville, May 3. Sec., Dr. A. B. DeLoach, 426 Scimitar Bldg., Memphis.

Oklahoma January Report

Dr. John W. Duke, secretary of the Oklahoma State Board of Medical Examiners, reports the written examination held at Oklahoma City, Jan. 12-14, 1915. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 70. The total number of candidates examined was 13, of whom 5 passed and 8 failed, including 1 osteopath. Four candidates were granted reregistration licenses. Thirteen candidates, including 1 osteopath, were licensed through reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Georgia College of Eclectic Med. and Surg.	(1913)	86
Tulane University of Louisiana	(1914)	81
Harvard University	(1896) 89; (1912)	86
Baylor University	(1914)	70
FAILED		
University of Arkansas	(1912) 66; (1913)	65
University of Louisville	(1914)	70*
College of Phys. and Surgs., Baltimore	(1907)	76*
Leonard Medical School	(1913)	70*
Meharry Medical College	(1914)	60
Vanderbilt University	(1893)	53

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
Medical College of Alabama	(1904)	Mississippi
University of Arkansas	(1910) (1913)	Arkansas
College of Phys. and Surgs., Chicago	(1906)	Indiana
Rush Medical College	(1896)	Nebraska
Medical College of Indiana	(1905)	Indiana
Physio-Medical College of Indiana	(1902)	Indiana
University of Louisville	(1911)	Kentucky
Baltimore Medical College	(1895)	N. Carolina
University Medical College, Kansas City	(1900)	Arkansas
Meharry Medical College	(1913)	Penna.
Fort Worth University	(1898)	New Mexico

* Conditioned in one subject.

The following questions were asked:

ANATOMY AND HISTOLOGY

1. Name the bones entering into the formation of the ankle joint. 2. Give the nerve supply of the anterior femoral group of muscles. 2. What arteries are usually cut in the Bassini operation for oblique inguinal hernia? 4. What relation does the femoral canal bear to: (*a*) gimbernate ligament? (*b*) the femoral vessels? 5. What is the origin of: (*a*) the ovarian artery, (*b*) the uterine artery? What artery in the male is analogous to the ovarian artery in the female? 6. What is the difference in the origin of the right and left common carotid arteries? 7. What are the appendices epiploicae? 8. How may you determine, approximately, the origin of epithelial cells seen in a centrifugalized specimen of urine? 9. What kind of tissue forms the inner coat of an artery? 10. By what route may there be a direct extension of infection from nasal cavity to superior longitudinal sinus?

PHYSIOLOGY

1. What does *vis a tergo* mean? To what does it refer in physiology? 2. Give names of the first and second pairs of cranial nerves and tell their function. 3. What nerves form the solar plexus, and what plexuses receive fibers from the solar plexus? 4. What veins have no valves? 5. What is an enzyme? 6. Upon what class of foods does saliva act? 7. Describe the lymphatic system and tell its function. 8. State circumstances that influence secretion of glands. 9. Describe reflex action. 10. What part of the brain controls coordination of muscular action?

TOXICOLOGY AND MEDICAL JURISPRUDENCE

1. Give the dose of morphin sulphate. Antidote and symptoms of morphin poisoning. 2. Give dose of strychnin sulphate. Symptoms of poisoning and antidote. 3. Give dose of white arsenic. Antidote and symptoms. 4. Give dose of tr. aconite. Treatment for poisoning. 5. Give dose of sulphonal, effect on blood and nervous system. 6. Give the signs of delivery in the dead. The post-mortem signs of parturition, both recent and remote. 7. How would you detect feigned unconsciousness? 8. How would you detect feigned paretic dementia which had been assumed after an offense had been committed? 9. What is civil malpractice? What is criminal malpractice? 10. Give method of commitment to the Oklahoma Hospital for the Insane.

SURGERY

1. What is gangrene? Give its causes. 2. How would you treat a case of tetanus? 3. How would you dress a fracture of the olecranon process? 4. Give differences between a direct and an indirect inguinal hernia. 5. How would you diagnose a hydrocele? Give treatment. 6. When should appendicitis be operated? Describe the operation and after-treatment when pus is found. 7. How would you treat a case of housemaid's knee? 8. When would you operate in a case of gunshot wound of abdomen? 9. What arteries do you cut in amputating leg at middle third? 10. Give signs of fracture.

CHEMISTRY

1. Define each and state the difference between combustion and oxidation. Name two chemical compounds which if mixed together will cause a combustion. 2. Give chemical antidotes for formaldehyd and iodin. 3. What is mucin and what is collodion, chemically? 4. What are aldehyds and name the halogens. 5. How does potassium permanganate act as a disinfectant? 6. What element is common in all acids, and name elements in alkaloids. 7. What is the chemical composition of the pancreatic juice? 8. What is albumin, and give the test for same in urine? 9. Give test for determining chemically whether urinary deposit is composed of urates or sulphates. 10. Give formula, and state the properties and give procedure to antidote case of nitric acid poisoning.

OBSTETRICS AND HYGIENE

1. Define position; presentation. 2. Name three acute diseases of the mother that endanger the life of the fetus. 3. How would you manage a case of complete placenta praevia? 4. What would be your treatment of a case of eclampsia occurring earlier than the eighth month of pregnancy? 5. How would you determine that a fetus was at full term when born? 6. Give symptoms, diagnosis and treatment of puerperal septicemia. 7. How would you deliver the head in breech presentation? 8. Give your treatment of post-partum hemorrhage. 9. What are the most common adulterations of milk? How are they injurious? 10. Name four preventable diseases. Give instructions for their prevention.

PHYSICAL DIAGNOSIS

1. Describe the stethoscope. 2. Name the physical signs of aortic insufficiency. 3. Describe the general method of palpation. 4. What does splashing fremitus signify when felt against the thoracic wall, shaking the body? 5. In what posture should the patient be to make the best physical examination of the chest? 7. Give physical signs of dislocated stomach. 8. How many ways may auscultation be conducted? 8. Diagnose enteroptosis (dropping of the viscera). 10. Diagnose dislocated kidney.

BACTERIOLOGY AND PATHOLOGY

1. Describe the pathologic lesions which may result from corneal ulcers. 2. What pathologic changes take place in lupus vulgaris? 3. What are: antiseptics, disinfectants, culture mediums, bacteria, and phagocytes? 4. Differentiate pathogenic and non-pathogenic organism. 5. Give method of growing culture on blood serum, gelatin and potato. 6. Name three bacteria usually found in an infected case of parturition. 7. What is *Diplococcus lanceolatus?* Give method of staining same. 8. Name three systemic diseases caused by micro-organisms. Give the pathology of each disease and name the specific organism of each. 9. What is hydatid cyst and where is it found? 10. Give pathology of cerebrospinal sclerosis.

MATERIA MEDICA AND PRACTICE

1. Name the official preparations of aconite and give dose of each. 2. Name the principal potassium salts and give dose of each. 3. Name four principal coal-tar derivatives. Give dose and medicinal use. 4. Strychnin: Give dose, medicinal use, therapeutic effect. 5. Give indications for use of heat and cold. Treat the following diseases, giving doses of drugs used and their therapeutic effect, the diet and prognosis: 6. Erysipelas. 7. Typhoid fever. 8. Whooping cough. 9. Acute follicular tonsillitis. 10. Syphilis.

GYNECOLOGY

1. Give etiology and treatment of pruritus vulvae. 2. Diagnose uterine fibroid. 3. Differentiate between chronic appendicitis and chronic salpingitis. 4. Under what conditions would you advise hysterectomy in cancer of the uterus? 5. Describe the perineal body. What are its functions? 6. Of what diagnostic value is digital examination via vagina? 7. Give gynecologic uses for heat, silver, glycerin, iodin. 8. Diagnose pudendal hernia. 9. Define leukorrhea. Give etiology and treatment. 10. Diagnose incipient carcinoma of cervix.

Book Notices

A LABORATORY MANUAL AND TEXT-BOOK OF EMBRYOLOGY. By Charles William Prentiss, A.M., Ph.D., Professor of Microscopic Anatomy in the Northwestern University Medical School, Chicago. Cloth. Price, $3.75. Pp. 400, with 368 illustrations. Philadelphia: W. B. Saunders Company, 1915.

"This book represents an attempt to combine brief descriptions of the vertebrate embryos, which are studied in the laboratory, with an account of human embryology adapted especially to the medical student" (author's preface). Its striking features are the large number of beautifully executed original figures, the combination of the use of dissection with sections in the study of mammalian embryos, the brevity of the written descriptions, and the fine typographic work. The author has practiced for years on methods of dissection of embryos, following the suggestions of the lamented Charles Sedgwick Minot; the figures of these dissections constitute the most original feature of the work, which will earn the appreciative gratitude of every teacher of embryology. There is much to be learned from the figures that is not mentioned in the text; the latter, indeed, is not so much illustrated by figures as descriptive of them. The book attains a high standard of technical excellence in many respects, and is recommended to teachers and students alike. The latter will find much of their laboratory work already performed for them. The main criticisms that may justly be made are: 1. The text descriptions are too brief in numerous places, and the student, therefore must receive an inexact idea of many processes. 2. Some old ideas and incorrect figures are used, in a few places only, in place of more recent work and figures: thus the gastrulation of birds is given wrongly, and the long out-of-date figures of Koller reproduced; Figure 32 (from Marshall's Embryology) is incorrect in several fundamental respects. 3. In the colored plate facing page 36, the cells in yellow are labeled "outer cells" and those in brown "inner cells" in the first five figures, and the relations are reversed in the next three, a confusing blunder in labeling which can be corrected in another edition. Figure 60 is also incorrectly described as a section of a thirty-six instead of a fifty hour embryo. 4. The treatment of the early development in the introduction and in the first two chapters is not very sure; on page 14 the law of recapitulation is attributed to Meckel in 1881. Meckel died in 1833; moreover, he was not the originator of the recapitulation theory, nor yet of the law of von Baer, who should always be mentioned first in considering the history of the law of recapitulation. The old term "alecithal" is used instead of "isolecithal," and Amphioxus is stated to have a telolecithal egg, though it is usually classed as isolecithal; (p. 36) the term "germinal vesicle" is not synonymous with "blastodermic vesicle"; it has a definite connotation of long standing which should not be changed. Other similar instances might be cited; but a few corrections in a new edition would overcome such defects. We may anticipate that the opportunity for this will not long be delayed, for the real excellences of the book far outweigh the causes for criticism.

A HANDBOOK OF FEVERS. By J. Campbell McClure, M.D., Physician to Out-Patients, the French Hospital, London. Cloth. Price, $3.50 net. Pp. 470. New York: Paul B. Hoeber, 1914.

Without attempting a complete discussion of the pathology or bacteriology of the diseases which he describes, the author aims to discuss fully their clinical history and especially their treatment. Therefore, it is best to examine the book with reference to these aims. Symptomatology and treatment are well described though both subjects might have been more fully considered. In typhoid fever the author commends tub baths, but says that they cannot be used well in private practice and that the same effects can be obtained by the use of cold compresses. He does not describe the methods of giving baths on the bed. He has a few words for vaccine and serum treatment, but does not discuss vaccine prophylaxis, although he has paragraphs or sections on home prophylaxis and public health administration. A brief paragraph is devoted to methods of infection. It is stated that ground saturated with the excreta of infected persons, converted into dust, may spread the infection through whole neighborhoods. The danger from soiled linens, etc., is spoken of, but no mention is made of transmission by flies and by food, though the latter is referred to in another paragraph when reference is made to typhoid carriers and the danger of their contaminating milk if they work in a dairy. Twenty-four pages are devoted to pulmonary tuberculosis, but other forms are not considered. The discussion is up to date but not sufficiently full for a handbook. The author describes twenty-three common and one uncommon febrile disease. He adopts a classification which oddly unites diseases usually considered very different and separates those usually considered allied. Moreover, the classification emphasizes our ignorance rather than our knowledge. He makes two groups of febrile diseases: (1) fevers of known bacteriology, and (2) fevers of uncertain bacteriology. He adds two chapters, one on beriberi and one on pellagra. It is difficult to understand why these are incorporated in a handbook of fevers. The author says that fever is not present as a part of either form of beriberi. His discussion of the etiology of this disease is not full and complete. He inclines to believe that it is infectious. The volume is a fairly good compilation of what is known of some of the common diseases, but should not be purchased if one wishes a full discussion, or the ripe judgment of a clinician.

THE MEDICAL HISTORY OF MILWAUKEE, 1834-1914. By Dr. Lewis Frederick Frank. Cloth. Price, $5. Pp. 272, with illustrations. Milwaukee: Germania Publishing Company, 1915.

The diffidence of most physicians in pushing their claims to fame before the public, in a way, has relegated them to a position somewhat subordinate to that of the poet, the statesman and the financier. To overcome this condition so far as the profession of Milwaukee is concerned, Dr. Frank has written this book. The city considered, compared with those of Europe or the East, is a rather young community. However, in the short period of sixty years since its beginning, the growth of Milwaukee, as typical of the West, has been rapid and full of thrilling interest. The lives of the pioneer physicians were more or less romantic, but their trials were numerous. Illustrative of the latter is the reproduction of some pages from the books of two old German physicians:

Dec. 1842	16 office visits 37½	$6.00
	Solution and powders	2.52
		$ 8.52
	Paid by receiving a stove.	
July 29, 1853	19 visits at 50c	$ 9.50
	2 oz. Syr. of rhubarb	.25
	Opening of abscess of breast	1.00
	Pencil fluid	.50
		$ 11.25
	Received 18 yds. of cotton for underwear at 11c	$1.98
	Bal.	$ 9.27

The book covers the various phases of medical activity, including medical societies and journalism and work in hospitals. The text is embellished with many good illustrations. With a few exceptions only the biographies of deceased physicians are included. The book is full of local interest.

THE STORY OF BETHLEHEM HOSPITAL FROM ITS FOUNDATION IN 1247. By Edward Geoffrey O'Donoghue, Chaplain to the Hospital. Cloth. Price, $5 net. Pp. 427, with 140 illustrations. New York: E. P. Dutton & Co., 1915.

This narrative, written by the present chaplain of Bethlehem Hospital, a man in full sympathy with the old institution, is as entrancing as a novel and as interesting a piece of medical belles-lettres as has been published for many a day. Famous characters of English history and literature pass through its pages. The care of the insane has always attracted the author because of the mystery and awe which accompany the dement. From the writing of novelists and poets, the author has picked the portions dealing with Bethlehem Hospital, and he has gathered from the British

Museum original manuscripts from the days of the pamphleteers. Among those mentioned who bore some connection to the institution are Bunyan, Hogarth, Crooke, Cromwell, Smollett and Defoe. The book chronicles also the altering attitude of medicine toward the insane. It takes us from the days of scourging and torture, through the periods of manacles, strait-jackets and the days of the padded cell, to the present era of unrestraint and kindliness. A hint is given concerning the beginning of the interest in this subject from the standpoint of eugenics. There are more than 100 plates and other illustrations. It is a book worth while for the leisure hour; a book to read and to save.

THE HOUSE-FLY (MUSCA DOMESTICA LINN). ITS STRUCTURE, HABITS, RELATION TO DISEASE AND CONTROL. By C. Gordon Hewitt, D.Sc., F.R.S.C., Dominion Entomologist of Canada. Cloth. Price, $4.50 net. Pp. 382, with 104 illustrations. New York: G. P. Putnam's Sons, 1914.

This book contains a description of the anatomic structure of the house fly and other flies found about dwelling places, an excellent description of the breeding and other habits of the fly and its larvae, notes on the natural enemies and parasites of the fly, and several chapters on the relation of house flies to disease. In the chapters on the dissemination of pathogenic organisms by flies, the carriage of typhoid fever, and the relation of flies to the summer diarrheas of infants and the spread of other diseases, the author has set forth the evidence on both sides, reviewing the investigations made to prove or disprove the rôle of flies as disease carriers, and giving the results of his own experiments. An interesting chapter is that of the relation of flies to myiasis and to the spread of intestinal worms, their rôle in the latter phenomenon not being perhaps a matter of common knowledge. Preventive and remedial measures are considered in a practical way. The different experimental methods of handling and treating manure, the prolific breeding ground of flies, is described, as well as measures for the protection of food, and the destruction of adult flies by trapping, poisoning, etc. The illustrations are good, and there is an extensive bibliography, with an index. The book is not intended for popular consumption, but is for the use of entomologists, physicians, health officers or others especially interested in the subject. For them it is a valuable book.

PRACTICAL TROPICAL SANITATION. A Manual for Sanitary Inspectors and Others Interested in the Prevention of Disease in Tropical and Sub-Tropical Countries. By W. Alex. Muirhead, Staff Surgeon, Royal Army Medical Corps. Cloth. Price, $3.50. Pp. 288, with 114 illustrations. New York: E. P. Dutton & Co., 1915.

This book is a compilation of the author's lectures on the subject, together with abstracts of lectures by such well-known sanitarians as Sir Ronald Ross, Professor Boyce and others. The author makes no claim to originality, and acknowledges his indebtedness to other text-books. His compilation is in reality a good outline abstract of the subject. The book is intended chiefly for sanitary inspectors who are not medically trained. It is written in simple language, is well illustrated, and contains reproductions of various form blanks and the method of using them in such service. A useful appendix gives the details of the preparation of specimens and filing of reports, notes on meteorology, and many tables of weights and measures, etc.

CHILD TRAINING AS AN EXACT SCIENCE. A Treatise Based on the Principles of Modern Psychology, Normal and Abnormal. By George W. Jacoby, M.D. Cloth. Price, $1.50 net. Pp. 384, with illustrations. New York: Funk & Wagnalls Company, 1914.

This is a satisfactory attempt to give in plain language to the teacher the up-to-date views of the psychologist and physician on the subject of child training. After the psychology of childhood, the psychic abnormalities receive attention. The etiology, etc., of the various types of imbeciles and idiots are discussed; then follows the part on prophylactic training in which the Montessori and other methods are taken up. Under therapeutic training the author treats the educable, and also the institutional and family care of the low grade idiots. The illustrations are of the various types of imbeciles and idiots.

THE COMMONER DISEASES, THEIR CAUSES AND EFFECTS. By Dr. Leonhard Jores, O.O., Professor der Allgemeinen Pathologie an der Universität Marburg. Authorized English Translation by William H. Woglom, M.D., Assistant Professor in Columbia University. Cloth. Price, $4. Pp. 424, with 250 illustrations. Philadelphia: J. B. Lippincott Company, 1915.

This book is the first portion of a more complete series to be published later. It is written to emphasize the relation of anatomic alteration to physiologic derangement, but does not consider questions of pure morphology or of differential diagnosis. The photographs are the actual valuable material in the book. It really is a series of articles on special pathology, beautifully illustrated with photographs of gross lesions and wash drawings, in colors, of microscopic appearances. The student of post-mortem diagnosis who masters the appearances of the lesions illustrated should not fail to recognize similar lesions in the subject. In the discussions in the text the author puts aside theory, omitting all problems which are still unsettled.

HANDBOOK OF MEDICAL ENTOMOLOGY. By William A. Riley, Ph.D., Professor of Insect Morphology and Parasitology, Cornell University, and O. A. Johannsen, Ph.D., Professor of Biology, Cornell University. Cloth. Price $2.20. Pp. 348, with 172 illustrations. Ithaca, N. Y.: Comstock Publishing Company, 1915.

The basis of this book is the previous work of the senior author, "Notes on the Relation of Insects to Disease," published in 1912. Naturally it depends for its completeness on a survey of a large amount of periodical literature lately published on this subject. The authors evidently have scanned this literature thoroughly, and they append a large alphabetical bibliography to the book which is brought up to date. The various insects which bear even a remote relation to human pathology are listed, classified, described and most of them illustrated. Hints are given on methods of treating the lesions and eliminating the pests, and suggestions regarding easily accessible literature give more information on these points.

THE ANATOMY OF DOMESTIC ANIMALS. By Septimus Sisson, S.B., V.S., Professor of Comparative Anatomy in the Ohio State University. Second Edition. Cloth. Price, $7 net. Pp. 930, with 724 illustrations. Philadelphia: W. B. Saunders, Company, 1914.

This revision of the author's excellent book on veterinary anatomy under a new title is the result of a careful review of the later literature, a further study of frozen sections and hardened specimens, which has caused a modification of many statements in the interest of scientific accuracy, and the addition of over 200 new illustrations, chiefly from photographs by the author. Synonyms have been dropped or placed in footnotes, and the nomenclature, so far as possible, has been improved by adopting the changes recommended by a recent committee of the American Veterinary Medical Association. The illustrations and type work are excellent, and the book remains a leading work on the anatomy of the domestic animals for the use of teachers, practitioners and students.

INFANT FEEDING. ITS PRINCIPLES AND PRACTICE. By F. L. Wachenheim, M.D., Attending Pediatrist, Sydenham Hospital, New York. Cloth. Price, $2 net. Pp. 340. Philadelphia: Lea & Febiger, 1915.

This is a comprehensive and concisely written volume, and, on the whole, an excellent guide to infant feeding. Especially valuable are the three chapters on milk modification, and that on the feeding of older infants. While the author mentions the different methods of feeding, he adheres strictly to the four-hour interval and the simple formulas, in which he follows closely the modern ideas on the subject. The book is especially full in its references, and the only criticism is that perhaps the author has not infused enough of his personality into the volume.

THE BACKWARD BABY. A Treatise on Idiocy and the Allied Mental Deficiencies in Infancy and Early Childhood. By Herman B. Sheffield, M.D. Cloth. Price, $1 net. Pp. 184, with 22 illustrations. New York: Rebman Company, 1915.

This is a rather loosely joined exposition of the subject. Chapters 4 and 5 on prophylaxis, prognosis and treatment are the redeeming chapters in the book.

Miscellany

Obligations of Patients to Their Physicians

[*From the Code of Ethics of the American Medical Association, 1847*]

1. The members of the medical profession, upon whom is enjoined the performance of so many important and arduous duties toward the community, and who are required to make so many sacrifices of comfort, ease and health for the welfare of those who avail themselves of their services, certainly have a right to expect and require that their patients should entertain a just sense of the duties which they owe to their medical attendants.

2. The first duty of a patient is to select as his medical adviser one who has received a regular professional education. In no trade or occupation do mankind rely on the skill of an untaught artist; and in medicine, confessedly the most difficult and intricate of the sciences, the world ought not to suppose that knowledge is intuitive.

3. Patients should prefer a physician whose habits of life are regular, and who is not devoted to company, pleasure or to any pursuit incompatible with his professional obligations. A patient should, also, confide the care of himself and family, as much as possible, to one physician; for a medical man who has become acquainted with the peculiarities of constitution, habits and predispositions of those he attends is more likely to be successful in his treatment than one who does not possess that knowledge.

A patient who has thus selected his physician should always apply for advice in what may appear to him trivial cases, for the most fatal results often supervene on the slightest accidents. It is of still more importance that he should apply for assistance in the forming stage of violent diseases; it is to a neglect of this precept that medicine owes much of the uncertainty and imperfection with which it has been reproached.

4. Patients should faithfully and unreservedly communicate to their physician the supposed cause of their disease. This is the more important, as many diseases of mental origin simulate those depending on external causes, and yet are only to be cured by ministering to the mind diseased. A patient should never be afraid of thus making his physician his friend and adviser; he should always bear in mind that a medical man is under the strongest obligations of secrecy. Even the female sex should never allow feelings of shame or delicacy to prevent their disclosing the seat, symptoms and causes of complaints peculiar to them. However commendable a modest reserve may be in the common occurrences of life, its strict observance in medicine is often attended with the most serious consequences, and a patient may sink under a painful and loathsome disease, which might have been readily prevented had timely intimation been given to the physician.

5. A patient should never weary his physician with a tedious detail of events or matters not appertaining to his disease. Even as relates to his actual symptoms, he will convey much more real information by giving clear answers to interrogatories, than by the most minute account of his own framing. Neither should he obtrude upon his physician the details of his business or the history of his family concerns.

6. The obedience of a patient to the prescriptions of his physician should be prompt and implicit. He should never permit his own crude opinions as to their fitness to influence his attention to them. A failure in one particular may render an otherwise judicious treatment dangerous, and even fatal. This remark is equally applicable to diet, drink and exercise. As patients become convalescent, they are very apt to suppose that the rules prescribed for them may be disregarded, and the consequence, but too often, is a relapse. Patients should never allow themselves to be persuaded to take any medicine whatever, that may be recommended to them by the self-constituted doctors and doctresses who are so frequently met with, and who pretend to possess infallible remedies for the cure of every disease. However simple some of their prescriptions may appear to be, it often happens that they are productive of much mischief, and in all cases they are injurious, by contravening the plan of treatment adopted by the physician.

7. A patient should, if possible, avoid even the friendly visits of a physician who is not attending him—and when he does receive them, he should never converse on the subject of his disease, as an observation may be made, without any intention of interference, which may destroy his confidence in the course he is pursuing, and induce him to neglect the directions prescribed to him. A patient should never send for a consulting physician without the express consent of his own medical attendant. It is of great importance that physicians should act in concert; for, although their modes of treatment may be attended with equal success when employed singly, yet conjointly they are very likely to be productive of disastrous results.

8. When a patient wishes to dismiss his physician, justice and common courtesy require that he should declare his reasons for so doing.

9. Patients should always, when practicable, send for their physician in the morning, before his usual hour of going out; for, by being early aware of the visits he has to pay during the day, the physician is able to apportion his time in such a manner as to prevent an interference of engagements. Patients should also avoid calling on their medical adviser unnecessarily during the hours devoted to meals or sleep. They should always be in readiness to receive the visits of their physician, as the detention of a few minutes is often of serious inconvenience to him.

10. A patient should, after his recovery, entertain a just and enduring sense of the value of the services rendered him by his physician; for these are of such a character that no mere pecuniary acknowledgment can repay or cancel them.

IF YOU

SPIT ON THE FLOOR

AT HOME

SPIT ON THE FLOOR HERE

WE WANT YOU TO

FEEL PERFECTLY AT HOME

STATE BOARD OF HEALTH
RALEIGH, N. C.

Reduction about one half.

Enter Prayer, Exit Pill

The day that the average physician displays a name plate on his door announcing that he is ready for practice, it is safe to assume that an investment has been made in his education approximately as follows:

From four to seven years at a university, representing a *minimum* of	$3,000.00
Living expenses during university course, *minimum*	3,000.00
Books, instruments, laboratory charges, etc.	1,000.00
Expenses during hospital internship	1,000.00
Total cost of medical education	$8,000.00

In the course of this training, extending over from five to ten years of his life, the physician has received instruction at the hands of men whose entire careers have been devoted to mastering the practice of medicine. Until he is past 35, his career is one constant, painstaking *preparation* for the protection of humanity against disease. A law pending in New York proposes to set all this preparedness at naught. The legislature of that state has been asked by the Christian Scientists to legalize the "practicing" of their healers.

The Christian Science "healer" enters upon his activities with the following stock in trade:

One copy of "Science and Health," by Mary Baker Eddy	$ 3.00
One satin-faced Prince Albert	35.00
	$38.00

Thus equipped, he can pray over a virulent case of smallpox until the infection sweeps the neighborhood. He should worry! There is no such thing as smallpox; the patient is merely in "error." Epidemics under the healer's benignant influence might ravage communities; it would be quite unnecessary to take steps to check them; there is no such thing as illness. As soon as the unfortunate victims receive faith through Mrs. Eddy's tract at $3 a copy, the scourge will subside.

It is all very simple—*buy the book!*

Weird incantations over the grievously ill passed out of American history when the last Kickapoo turned his toes to the setting sun. Before the steady stride of enlightenment, the old lady who wore red yarn around her ankle to ward off chilblains has linked arms with her consort who carried a shriveled horsechestnut in his vest pocket as a cure for rheumatism, and together they have passed into the Great Beyond, a little earlier, perhaps, than had their ailments been attended to by a skilled physician.

Superstition, whether set forth in "Science and Health" or Hostetter's Almanac, is banished from most intelligent minds. Diseases that a generation ago spelled certain fatality are now under the doctor's control. They are not cured by prayer, nor by sorcery. Mary Baker Eddy was an extremely commonplace New England woman. It has been our privilege to read some of her early correspondence in the original; much of it was illiterate and none of it convincing.

Licensing the Christian Science healer is a dangerous retrogression. If it meant the substitution of prayer for Peruna, we would advocate it; but we cannot imagine a condition which might place control over a deadly epidemic in the hands of a zealot who enters upon his medical career with an investment of thirty-eight dollars.—*Puck*, April 10, 1915.

Social Service in Toronto Hospitals

A social service clinic was established in connection with the Toronto General Hospital in April, 1914. It is under the immediate direction of the medical superintendent, Dr. Charles K. Clarke; and Dr. Oswald C. Withrow and Dr. Clarence M. Hincks are the assistants. Up to Sept. 30, 1914, more than 100 patients were examined, being referred from the juvenile court, different schools, orphanages, etc. In all Ontario it is computed there are something over 5,000 defectives—two or three per thousand of the population. In Toronto alone they number from 300 to 500. The city of Toronto has approved the establishing of a training school, and the minister of education in Ontario has had prepared a handbook on "auxiliary classes," and will establish in 1915 a summer school for the training of teachers of these classes. In the institutions for children in Toronto for the year ended Sept. 30, 1914, there were 937 children under 3 years of age in two of the large institutions of the city. One hundred and seventeen of these died, or 12.4 per cent., although many of them were receiving breast milk. Among 258 illegitimate children, most under 1 year of age, placed in private families, all of them bottle fed, there were forty-three deaths in three years—16.6 per cent. Eight institutions in Toronto with a population of 2,101 boys and girls, receive assistance from the Ontario government. The cost of maintenance of each child per week is $1.60. Dr. W. Harlev Smith, the inspector of these institutions in Toronto, states there is a foolish prejudice against children born out of wedlock. After an experience of many years, he asserts that these, if given a chance, and placed in favorable surroundings, become as good, serviceable men and women as any children born in wedlock. He believes that the crèche is an institution of ephermeral existence. Mothers and widows should be paid a living wage to stay at home and devote their time to bringing up their own children.

Health Conditions in China

The death rate in China is higher than that of any other country, it is said, and the Chinese have been quoted as saying that this is not wholly undesirable, on account of the fecundity of the race and the limitation of the food supply. In discussing this question the report of the China Medical Commission of the Rockefeller Foundation says that aside from the humanitarian bearing of such an attitude the enormous importance of the economic effects of widespread disease is ignored; that if a nation is healthy and energetic and efficient it will be able greatly to increase its productive power. It is said that while some districts are very much congested, there are still large areas of arable land that are not utilized and also other large sources of national wealth that are practically untouched. Mines of various metals are known and doubtless other deposits of coal, iron, copper, etc., will be disclosed by investigation. The development of railroads, the reforestation of large areas of denuded hill country, the opening of mines and the reclamation of barren and flooded areas suitable for agriculture will afford large outlet for labor. It is believed to be not only possible for the population of the country to be supported in comfort at the present rapid rate of increase, but also at a much larger rate. The present rate of increase, in which possibly religious beliefs and practices figure, will no doubt be modified by the development of western ideas, the tendency of which in western countries has been the unfailing lessening of the birth rate. It is said that though this tendency may be somewhat checked by special conditions in China, in the long run such a condition will prevail.

Injuries to Airmen

Hardy V. Wells, R. N., in the *Journal of the Royal Naval Medical Service*, describes accidents to pilots in the aviation service. With the speed of aeroplanes now increased to seventy miles an hour, the crushing effect is very great when one of these planes falls to the earth, even from a moderate height. Cases occur in which the pilot is not crushed, but is injured, his head or a portion of the body striking some part of the machine as it hits the earth. Many of the modern planes have the engine in front and the pilot is well back. In these machines the engine takes the chief shock and the portion of the machine immediately behind crumples up while the pilot's seat may suffer little damage. Usually it is the pilot's head that is injured. His body is stopped either by a safety belt or by an outstretched hand, while the head bends forcibly forward, striking some portion of the machine causing wounds or violently wrenching the neck. One instance is described in which the neck was broken. Some pilots object to wearing safety belts on account of the difficulty of releasing themselves in case of accident and crushing of the planes. In some instances pilots have been burned on account of failure to release themselves from the wrecked machine. Most pilots, however, favor the use of belts. Releasing devices have been arranged, by which the belt with a slight manipulation is released from the machine. These sometimes fail to work in emergencies. Sometimes accidents occur to pilots by being thrown from the seat when not strapped in which the aeroplane strikes a bad "hole" in the air, their feet being thrown from the controls. Helmets protect the head from injuries by spars and wires when a machine is crushed, though some pilots object to them on account of being uncomfortable and offering head resistance to the air, forcing the head back in an annoying manner.

Suicides in Italy.—The mortality from suicide in Italy in the five years ending with 1910 ranged from 2,319 to 2,969, the deaths from chronic alcoholism from 702 to 1,408. These figures are given in the *Policlinico* which states that the average of suicides per 100,000 inhabitants was for Paris, 42; Petrograd, 27; Berlin, 36; London, 23; Rome, 8; Brussels, 15; Amsterdam, 14; Lisbon, 2; Stockholm, 27; Constantinople, 12, and Geneva, 11.

Medicolegal

Defects in Information and Trial for Unlawfully Practicing Medicine

(Collins vs. State (Tex.), 171 S. W. R. 729)

The Court of Criminal Appeals of Texas reverses a conviction of the defendant of unlawfully practicing medicine and remands the case for a new trial. The court says that in order to obtain the enhanced punishment authorized by the penal code where the party has been previously convicted of similar offenses, the information charged that the defendant had been before convicted of the same offense, setting out two instances in which he had been previously convicted of the same offense. This did not properly charge this character of case. This question was again raised when the state offered in evidence the records of prior convictions. The trial court permitted these judgments to go to the jury, but instructed the jury in the charge not to consider the prior convictions. The indictment was not sufficient in this respect. The court was in error in permitting the evidence to go before the jury to be considered by them, which error was not cured by withdrawing the illegal testimony in the charge. Then, it was error to authorize the jury to convict the defendant if, among other things, he charged any money of any sort for medical treatment. The information alleged that he charged $2 current money of the United States of America for his services. The evidence did not show what kind of money was paid. The witness said "$2." If it was not current money of the United States, of course that allegation would not be met, and the court should have confined the jury to finding the money to be current money of the United States. It was also objectionable under the circumstances to permit the introduction of evidence that the defendant had a credit of $247 on the books on a newspaper publishing company. Possibly or probably it might be connected up so as to make it admissible. If the state was trying to show that he was publishing to the world through a newspaper that he was practicing medicine and this money was placed there to pay for such advertisements in that paper, it might be admissible, but it must be connected in some way so as to make it admissible. Where a newspaper advertisement of an osteopathic infirmary named the defendant as physician and surgeon in chief and advertised the infirmary as a hospital, for the cure of diseased persons, if the defendant authorized the publication, it would be admissible against him, but until that was shown in some way, the mere fact that the infirmary published his name with it would not make him responsible. If he was connected with that infirmary, and it was so shown, this evidence might be admissible to show that he was engaged in that particular character of practice of medicine, but unless it was connected in some way, the testimony would not be admissible.

Infirmities from Old Age, Insane Delusions, Prejudices, Beliefs, Insanity and Testamentary Capacity

(Carnahan vs. Hamilton (Ill.), 107 N. E. R. 210)

The Supreme Court of Illinois reverses a judgment obtained by the plaintiff in her contest of the will of her grandfather. The court says that infirmity from old age does not render a person incapable of making a will, unless such infirmity has so far impaired the testator's mind that he is incapable of understanding his business at the time he is engaged in making the will. To sustain an allegation of want of testamentary capacity something more must be shown than mere physical disease and old age on the part of the testator.

An "insane delusion" which will render one incapable of making a will is difficult to define. This court has said that it is a belief in a state or condition of things in the existence of which no rational person would believe. Again, it has been stated that an insane delusion is a belief in something impossible in the nature of things, or impossible under the circumstances surrounding the individual, which refuses to yield either to evidence or reason.

Prejudice of the testator against a relative is not ground for setting aside a will unless it can be explained on no other ground than that of an insane delusion. A person may be prejudiced against some of his children or persons who are the natural objects of his bounty and make unfair remarks about them without having a proper foundation for his conduct, but it does not necessarily follow that he is without testamentary capacity. Unreasonable prejudice against relatives is not ordinarily ground for invalidating a will. That can only be done when the testator's aversion is shown to be the result of an insane delusion, his conduct not being able to be explained on any other ground.

An unequal division of the testator's property among his heirs does not, of itself, justify the court in holding that he did not possess testamentary capacity. It is only a circumstance which the jury may consider, with other evidence, in passing on the soundness of mind of the testator.

It cannot be presumed that the testator is insane merely because his father was insane. Until the disease manifests its presence the court cannot infer its existence in the mind of the person in question.

The fact that a person believes in witchcraft, clairvoyance, spiritual influences, presentiments of the occurrences of future events, dreams, mind-reading, and the like, does not necessarily affect the validity of his will. Manifestly, a man's belief cannot be made a test of sanity. When we leave the domain of experience or knowledge and enter on the field of belief the range is limitless, extending from the highest degree of rationality to the wildest dreams of superstition. What to one man may be a reasonable belief is to another wholly unreasonable. While, under certain circumstances, belief in what men generally understand to be supernatural may tend to prove insanity, it is well known that some of the brightest and clearest intellects have honestly believed in spiritualism and other apparently supernatural influences. It is the settled law that testamentary capacity cannot be determined, alone, by what one believes, nor by the character of the tales he tells concerning hidden treasure, spirits, spooks, and supernatural things.

Whether hardening of the arteries has affected the mind is not a question of what the tendency of that disease is, but the proof must be as to its effect in the particular case. That an old man in the condition of this testator after his daughter's death should want a home and would be looking for a wife and companion cannot be very strong proof of unsoundness of mind. Such a desire is usually recognized as strong proof of a sane mind.

Company Not Liable for Services Rendered to Injured Employee

(Vanderboget vs. Campbell Mill Co. (Wash.), 144 Pac. R. 905)

The Supreme Court of Washington reverses a judgment obtained by the plaintiff for services rendered in the care of an injured employee, who died three days after he met his injury, the court directing that the plaintiff's action be dismissed. After the employee was injured the company's superintendent directed a lumber salesman to take him to a hospital, and telephoned to an uncle to meet him. The uncle told the physician employed by the hospital association to treat the company's employees that his services would not be required; that the plaintiff would have charge of the case. He said he told the salesman that he wanted his family physician to attend his nephew, receiving the answer, "That is all right; go ahead." The uncle further testified that, after his nephew died he telephoned to the salesman that there were physicians' and nurse's charges, and was answered: "We will see that all settled." The salesman, on the other hand, testified that he told the uncle that the company would not pay for the services of a physician. But assuming that the uncle correctly related his conversation with the salesman, the court holds that the company was not liable. It had arranged in advance for medical and hospital care for the injured employee, in obedience to its contract with him. It exacted and withheld $1 per month from the wages of each employee and paid it to the hospital association.

This entitled the employee to medical attendance at the hospital. The arrangement had the implied assent of the injured employee. The salesman was a subordinate employee, and under the circumstances had no authority to obligate the company to pay for medical and surgical assistance. It has been held in some jurisdictions that, while a corporation is not responsible generally for medical or surgical aid to a sick or injured employee, it is obligated to render an employee such assistance in extreme cases, where immediate attention is required to save life or prevent great injury. It is said that the duty begins and ends with the emergency. It has been held that, in a railroad accident, where an employee is seriously injured on the road at a place remote from the center of authority, the highest representative of the company present, from the necessities of the case, has authority to employ medical and surgical aid. The rule has usually, if not always, been applied to railroad corporations, and the liability has been limited to cases in which there was an extreme emergency calling for immediate medical or surgical attention. Though this court should adopt the rule of these cases, and it has been rejected by many courts of the highest learning and respectability, no emergency was shown in this case which would enlarge the powers of a subordinate representative, such as the salesman, for two reasons: (a) The company had already made reasonable provision for medical and surgical attention and hospital care; and (b) the company's place of business was near the city in which the hospital was, had telephonic communication with it, and its representative officers could have been readily communicated with. Nor was it liable in this case because it exacted and withheld a portion of the employee's wages. That imposed a duty on it to provide reasonable care and attention. This it had arranged for in advance.

Funds Not Recoverable by "Company Doctor"

(*Wagner vs. Brady et al.* (*Tenn.*), *171 S. W. R. 1179*)

The Supreme Court of Tennessee reverses a decree obtained by the complainant, a physician, who sought a decree against the defendant Brady for certain sums of money collected by Brady through his agents from laborers and employees engaged in the construction of a lock and dam. It was averred that said sums were collected out of the wages of the laborers and employees on "representations made to them that the funds thus collected would go to the company doctor and for their benefit in the way of purchasing medicines, providing hospital equipment, etc." The court says that it was clear from the proof, and the complainant expressly admitted in his evidence, that he never contracted with the defendant Brady for any part of the sum so collected from employees and laborers. The complainant relied on no contract right to any interest in this fund, but relied wholly on the provisions of chapter 259 of the Acts of Tennessee of 1889, and must make out his case by a preponderance of all the proof under the terms of that act. In order to fall within its terms, he must show that a specific fund was in the hands of the defendants, withheld from the wages of employees and laborers, for the avowed purpose of paying his salary as "company doctor"; and proof of a general understanding among the employees and laborers as to the avowed purpose for which the fund was withheld was not sufficient under the statute. In the only cases where recoveries under this statute have been approved by this court, there was proof, not only as to the amount of the fund, but of the fact that it was withheld for the avowed purpose expressed in the statute. On the whole case, it is the conclusion of the court that, according to the preponderance of the proof in the record, the complainant failed to show the existence of a fund in which he had, or ever had, any interest under the act of 1889. The proof did not show, within the meaning of that act, that the fund which did exist was withheld under an avowed purpose which would bring it within the terms of that act as a fund held in trust for the complainant. The court has no warrant of law to expand the terms of that act; it can only apply the act when a case is within its terms. The complainant's bill must be dismissed.

Skill Required of Surgeon and Bases of Damages for Malpractice

(*Fowler vs. Burris* (*Mo.*), *171 S. W. R. 620*)

The Springfield (Mo.) Court of Appeals reverses a judgment obtained by the plaintiff for alleged malpractice on the part of the defendant, a physician, in treating the plaintiff's broken arm, remanding the case for a new trial. The court says the evidence showed that the defendant treated the plaintiff's injuries only once. At that time the arm was considerably swollen, and the evidence tended to show that it would be difficult to determine the kind or extent of the injuries. The defendant stated that he expected the plaintiff to come to his office for further treatment; but there was other evidence to the effect that he gave no directions for her to do so, but, on the contrary, said that his first treatment was all that was necessary.

According to one instruction given to the jury, the care and skill a surgeon should use in his practice should be proportionate to the character of the injury he treats. The court thinks that this is true with reference to the care and diligence which he should use in attending an injured person, but it can hardly be said that his skill should increase in proportion to the severity of the injury. One's skill is a matter of slow growth and cannot be increased on short notice. The court thinks also that this instruction required too great a degree of skill and diligence in treating an injury to say that this should be proportionate to the character of the injury "within the limits of all ordinary skill and knowledge."

Another instruction proceeded on the theory that the plaintiff should be awarded damages for her entire injury and the physical pain and mental anguish resulting therefrom, and held the defendant accountable for all impairment of her earning power, provided the jury found for the plaintiff on the ground of the defendant's negligence in treating the injury. But the evidence in this case showed, and common sense teaches us, that a broken arm is itself a serious injury, regardless of the way in which it is treated by the attending physician, and that it necessarily results in much bodily pain and mental anguish, and that it takes considerable time for the injured member to regain its normal strength and efficiency, and that in many, if not most, cases the injury is more or less permanent and the usefulness of the arm impaired even with skilful surgical treatment. The attending surgeon, therefore, cannot be held liable for all the damages growing out of the injury. He is not responsible for the original injury and its usual and natural consequences with proper treatment. It would be proper for the jury to be told that in estimating the amount of damages they should not take into account the injury and pain of body and mind, or any impairment of the plaintiff's strength or earning power due to the breaking of the arm, and that the defendant, if found negligent, was only to be held in damages for any increased injury and pain of body and mind, or impairment of the use of the arm occasioned by his negligence in his manner of treating the same. Furthermore, the court knows of no case holding that, in an action for actual damages based on negligence, the question of the plaintiff's poverty or the defendant's wealth has any proper place either in showing the defendant's negligence or as a basis for estimating the plaintiff's damages.

Use of Medical Books in the Refutation and Cross-examination of Expert Witnesses

(*State vs. Brunette* (*N. D.*), *150 N. W. R. 271*)

The Supreme Court of North Dakota holds that, before the contents of medical books may be introduced in evidence and read to the jury for the purpose of refuting the testimony of a medical expert, it is necessary that the attention of the witness shall be first called to such books, and that he shall have based his opinion on the same. It would be a mere evasion of the rule to allow counsel, in the crossexamination of a witness who has not either based his opinion on the specific book or on the authorities generally, nor whose

opinion in the nature of things must necessarily be based on authorities, to read to such witness portions of a medical work, and to ask him if he concurs in or differs from the opinions therein expressed. Such a proceeding would be nothing more nor less than impeaching the witness by a text-book on which he has in no way relied, and where no foundation for his impeachment has been laid, and by an authority who is not in court and cannot be crossexamined. Where, however, a medical witness has in his examination in chief based his opinion on the medical authorities generally, rather than on the result of his own personal experience, it is permissible in crossexamination to read to him portions of medical works and to ask if he concurs therewith or differs therefrom, and to thus test his knowledge and reading and accuracy, even though he has not, in his direct or crossexamination, referred to any specific work. Where this is done, however, the proper practice is for the court to caution the jury that it is the testimony of the witness, and not what is read from the book, that constitutes evidence in the case.

Medical Practice Act Constitutional

(People vs. Ah Fong (Cal.), 145 Pac. R. 153)

The district Court of Appeals of California, First District, affirms a judgment of conviction of the defendant, who was charged with violating an act for the regulation of the practice of medicine and surgery, etc., approved June 2, 1913. The court says that there was no merit in the contention that the statute under which the defendant was prosecuted and convicted is unconstitutional. In the judgment of the court, the title of the act indicates with sufficient detail the entire subject matter of the act; and the court is satisfied that there is not in the body of the statute in question anything which is in conflict with its title or not included within the scope thereof. The court is also satisfied, from a reading of the entire evidence in the case, that it was sufficient to sustain the verdict and the judgment against the defendant.

Society Proceedings

COMING MEETINGS

AMERICAN MEDICAL ASSOCIATION, SAN FRANCISCO, JUNE 21-25.

Alabama State Medical Association, Birmingham, Apr. 20-23.
Am. Assn. Gen.-Urin. Surgs., White Sulphur Springs, W. Va., May 18-20.
American Association of Immunologists, Washington, May 10.
American Dermatological Association, New York, May 13-15.
American Gastro-Enterological Association, Baltimore, May 10-11.
Amer. Gynecological Society, White Sulphur Springs, W. Va., May 18-20.
American Laryngological Association, Niagara Falls, June 1-3.
American Medico-Psychological Assn., Fortress Monroe, Va., May 11-14.
American Neurological Association, New York City, May 6-8.
American Orthopedic Association, Detroit, May 6-8.
American Otological Society, Niagara Falls, June 3-4.
American Pediatric Society, Lakewood, N. J., May, 25-27.
American Psychopathological Association, New York, May 5.
American Surgical Association, Rochester, Minn., June 9-11.
Arkansas Medical Society, Little Rock, May 3-6.
Association of American Physicians, Washington, May 11-12.
Conf. of State and Prov. Boards of North America, Washington, May 14.
Connecticut State Medical Society, Hartford, May 19-20.
Florida Medical Association, De Land, May 12-14.
Georgia Medical Association, Macon, April 21-23.
Illinois State Medical Society, Springfield, May 19-20.
Iowa State Medical Society, Waterloo, May 12-14.
Kansas Medical Society, Kansas City, May 5-6.
Louisiana State Medical Society, Lake Charles, April 20-22.
Maine Medical Association, Poland Springs, June 9-10.
Maryland Medical and Chir. Faculty, Baltimore, April 27-29.
Massachusetts Medical Society, Boston, June 8-9.
Mississippi State Med. Association, Hattiesburg, May 11.
Missouri State Medical Association, St. Joseph, May 10-12.
Nat'l Assn. for the Study of Epilepsy, Old Point Comfort, Va., May 10.
Nebraska State Medical Association, Hastings, May 18-20.
New Hampshire Medical Society, Concord, May 19.
New York State Medical Society, Buffalo, April 27-29.
North Dakota State Medical Association, Bismarck, May 12-13.
Ohio State Medical Association, Cincinnati, May 4-6.
Oklahoma State Medical Association, Bartlesville, May 11-13.
Rhode Island Medical Society, Providence, June 3.
South Carolina Medical Association, Greenwood, April 20-22.
Texas State Medical Association, Ft. Worth, May 4-6.
West Virginia State Medical Association, Huntington, May 12-14.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Albany (N. Y.) Medical Annals

March, XXXVI, No. 3, pp. 101-150

1 Pathology of Exophthalmic Goiter. E. Kellert, Boston.
2 Physiology and Pathologic Chemistry of Exophthalmic Goiter. A. Knudson, Albany.
3 Exophthalmic Goiter; Etiology and Symptomatology. C. B. Hawn, Albany
4 Medical Therapeusis of Exophthalmic Goiter. E. Corning, Albany.
5 Surgical Treatment of Exophthalmic Goiter. A. H. Traver, Albany.

Archives of Ophthalmology, New Rochelle, N. Y.

March, XLIV, No. 2, pp. 109-220

6 Topical Diagnostic and Psychiatric Value of Wilbrand Test with New Clinical Instrument. C. B. Walker, Boston.
7 Histologic Findings after Successful Sclerostomy. F. H. Verhoeff, Boston.
8 Traumatic Pulsating Exophthalmos, with Complete Bibliography. A. J. Bedell, Albany.
9 Removal of Eyeball. H. S. Gradle, Chicago.
10 Technic of Evisceration. H. Gifford, Omaha.
11 Operative Treatment of Retinal Detachment. A. Elschnig.
12 Method of Preserving Macroscopic Eye Specimens in Their Natural Colors. R. Greeff, Berlin.
13 Conservation of Vision. G. S. Derby and H. C. Greene, Boston.

Boston Medical and Surgical Journal

April 1, CLXXII, No. 13, pp. 467-502

14 Changed Position of Profession of Medicine. D. W. Cheever, Boston.
15 Menace of Syphilis to Clean Living Public. J. H. Blaisdell, Boston.
16 *Undescribed Ulnar Nerve Trouble, Due to Tension from Scar and Its Cure. F. J. Cotton, Boston.
17 Some Nervous Affections in which Massage Deserves More Frequent Use. (Wryneck and Writers' Cramp.) J. W. Courtney, Boston.

16. **Ulnar Nerve Trouble, Due to Tension from Scar and Its Cure.**—From observations, of the last three years, Cotton has come to regard as a separate class (apparently unrecognized hitherto) lesions of the ulnar nerve at the elbow, due to the intermittent tension produced by elbow motion on a nerve held rigidly fixed by deep scar. Not all these cases have had any fracture at all, and none of them any compression of the nerve, even by scar, so far as could be determined. The mechanism is purely fixation of the nerve by scar tissue, at the turn of the elbow, in which it lies in the epitrochlear groove, or in the inch next below this point. Given a nerve so fixed, it must necessarily happen that flexion of the elbow must pull on it, and ordinary use of the arm must give intermittent traction on the nerve trunk.

The result may be in some measure a paresis in the muscles supplied by the nerve, sometimes with marked atrophy in the muscles of the hand, but more particularly, the damage expresses itself in pain; pain radiating from the elbow down to the last two fingers, with numbness to touch in this region; a numbness not usually serious in itself, but important as an indication of real trouble. Pain and a partial paresis of the intrinsic muscles of the hand, expressed in weakness and clumsiness in executing the finer movements of the fingers, are the factors which principally form the list of complaints from the patient. Relief of this condition is surgical. Just as in the cases of intermittent nerve-pressure symptoms from recurrent luxation of the nerve at the elbow, so here also, the only remedy is removal of the nerve to a more favorable site; Cotton can relieve symptoms by dissecting out the nerve, carrying it forward and imbedding it in loose fat and muscle. Seven cases are reported.

Colorado Medicine, Denver

March, XII, No. 3, pp. 65-100

18 Therapeutic Importance of Mental Attitude of Patient. E. J. A. Rogers, Denver.
19 Psychotherapy. Report of Case. E. W. Lazell, Denver.
20 Prevention of False Keloids in Scars by Underlining of Incisions with Strips of Fascia Lata. L. Freeman, Denver.
21 Nasopharyngeal Polypus. R. Levy, Denver.

22 Modern Pseudomedical Cults. 1. Osteopathy. C. Powell, Denver.
23 Diagnosis of Gonococcal Affections by Complement-Fixation Test. W. W. Williams, Denver.

Georgia Medical Association Journal, Augusta

March, IV, No. 11, pp. 311-336

24 Medical Inspection of School Children. W. L. Funkhouser, Rome.
25 Treatment of Pneumonia. W. F. Peacock, Vidalia.
26 Pneumonia, Preceded by Pleurisy and Accompanied by Jaundice. S. R. Roberts, Atlanta.
27 Adenoid Tissue, Its Relation to Middle Ear; Consequences. B. H. Minchew, Waycross.
28 Case of Vincent's Angina. J. M. Smith, Valdosta.
29 Why I Want To Be A Physician. H. P. Smith, Pearson.
30 Inflammatory Affections of Nasal Mucosa and Accessory Sinuses in Children. H. C. Whelchel, Douglas.
31 Examining Physician's Relation to Insurance Company, Its Agent and Applicant. J. W. Simmons, Brunswick.

Journal of Biological Chemistry, Baltimore

March, XX, No. 3, pp. 179-461

32 Use of Colloidal Iron in Determination of Lactose in Milk. R. L. Hill, Ithaca, N. Y.
33 Spectroscopic Investigation of Reduction of Hemoglobin by Tissue Reductase. D. F. Harris, Halifax, N. S., and H. J. M. Creighton, Swarthmore, Canada.
34 Studies in Carbohydrate Metabolism. Influence of Hydrazin on Utilization of Dextrose. F. P. Underhill and A. G. Hogan, New Haven, Conn.
35 Id. Influence of Hydrazin on Glyoxalase Activity of Liver. F. P. Underhill and A. G. Hogan, New Haven, Conn.
36 *Colorimetric Method for Estimation of Amino-Acid a-Nitrogen. V. J. Harding and R. M. MacLean, Montreal.
37 Metabolism of Vegetarians as Compared with Metabolism of Non-Vegetarians of Like Weight and Height. F. G. Benedict, Boston, and P. Roth, Battle Creek, Mich.
38 Metabolism of Athletes as Compared with Normal Individuals of Similar Height and Weight. F. G. Benedict, Boston, and H. M. Smith, Syracuse, N. Y.
39 Comparison of Basal Metabolism of Normal Men and Women. F. G. Benedict and L. E. Emmes, Boston.
40 Factors Affecting Basal Metabolism. F. G. Benedict, Boston.
41 Respiration Apparatus for Small Animals. F. G. Benedict, Boston.
42 Simple Quartz Mercury-Vapor Lamps for Biologic and Photochemical Investigations. W. T. Bovie, Cambridge, Mass.
43 *Metabolic Relationship of Proteins to Glucose. N. W. Janney, New York.
44 Comparative Nutritive Value of Certain Proteins in Growth and Problem of Protein Minimum. T. B. Osborne and L. B. Mendel, New Haven, Conn.
45 *Influence of Natural Fats on Growth. T. B. Osborne and L. B. Mendel, New Haven, Conn.
46 Non-Protein Nitrogenous Compounds of Blood in Nephritis, with Special Reference to Creatinin and Uric Acid. V. C. Myers and M. S. Fine, New York.
47 Method for Quantitative Estimation of Certain Groups in Phospholipins. M. L. Foster, Chicago.
48 *Influence of Plane of Protein Intake on Growth. E. V. McCollum and M. Davis, Madison, Wis.
49 Mutarotation of Phenylosazones of Pentoses and Hexoses. P. A. Levene and F. B. La Forge, New York.
50 Chondroitin Sulphuric Acid. P. A. Levene and F. B. La Forge, New York.
51 Behavior of Bacteria Toward Purified Animal and Vegetable Proteins. J. A. Sperry and L. F. Rettger, New Haven, Conn.

36. **Estimation of Amino-Acid a-Nitrogen.**—A method has been devised by Harding and MacLean for the estimation of amino-acid *a*-nitrogen by the use of triketohydrindene hydrate and pyridin. It will estimate within the ranges of 0.005 mg. to 0.05 mg. amino-acid *a*-nitrogen per cubic centimeter. The method is inaccurate, however, for cystin. It is applicable to the determination of amino-acid *a*-nitrogen (in neutral solution) set free in protein hydrolysis.

43. **Metabolic Relationship of Proteins to Glucose.**—Vegetable and animal proteins, Janney states, are metabolized at the same rate in the animal organism. All the extra glucose and nitrogen are eliminated by the ninth hour after ingestion. Each protein produces a definite amount of glucose in the phlorhizinized organism. The various yields represent 50 to 80 per cent. by weight of the protein administered. These yields approximate the ratios which the glucogenetic amino-acids of the proteins in each case bear to the total amino-acids, as actually determined by hydrolysis.

45. **Influence of Natural Fats on Growth.**—The new features of this communication are summarized by Osborne and Mendel as follows: The failure of lard to promote growth in the same manner as other natural fats (namely, butter fat, egg-yolk fat, cod liver oil) do, is not attributable to deteriorating changes arising from heat or chemical agents in the commercial manufacture of the product. Heating butter fat with steam does not destroy its growth-promoting efficiency. Beef fat also renders the inefficient diets used by us more suitable for producing growth in rats than does lard. When butter fat and beef fat are subjected to fractional crystallization from alcohol, the growth-promoting factor remains in the mother liquor or "oil" fractions. The fractions containing the fats with high melting points are ineffective. Some quantitative aspects of the growth-promoting efficiency of the natural fats are discussed.

48. **Influence of Protein Intake on Growth.**—It is evident from the curves shown by McCollum and Davis that the lowest plane of protein intake derived from milk which can maintain young rats without loss of body weight is 3 per cent. of the food mixture. There is a progressive increase in the rate of growth with rations derived from milk, as the plane of protein intake is raised between 3 and 8 per cent. of the diet. It is evident that for a time at least rats may grow at about half the normal rate when the protein is supplied by the wheat kernel to the extent of 6 per cent. of the food mixture; 2.45 per cent. of protein derived from desiccated egg is not sufficient to maintain young rats without loss of body weight. During six weeks a ration carrying but 4 per cent. of protein from wheat embryo compares favorably with a similar plane of protein intake derived from milk powder, and is somewhat better than 6 per cent. of protein from entire kernel. McCollum and Davis believe that this plan of experimentation offers a valuable method of comparison of the proteins from various sources, provided all deficiencies are made up by suitable additions.

Journal of Infectious Diseases, Chicago

March, XVI, No. 2, pp. 109-347

52 *Mechanism of Phagocytosis. G. L. Kite and W. B. Wherry, Woods Hole, Mass.
53 *Technic of Wassermann Reaction. R. Ottenberg and B. Frazier, New York.
54 *Comparison of Immunizing Effects of Subcutaneous and Intraperitoneal Administrations of Tumor Cells Against Growth or Carcinoma in Mice. M. G. Seelig and M. S. Fleisher, St. Louis.
55 *Experimental Study of Distribution and Habitat of Tetanus Bacillus. W. Noble, New Haven, Conn.
56 *Syphilitic Leptomeningitis. E. R. LeCount and K. Dewey, Chicago.
57 *Studies on Cultivation of Virus of Vaccinia. E. Steinhardt and M. Grund, New York.
58 Study of So-Called Implantation of Bacillus Bulgaricus. A. H. Rahe, New York.
59 Variability of Two Strains of Streptococcus Lacticus. P. G. Heinemann, Chicago.
60 *Bacteriology of Appendicitis and Its Production by Intravenous Injection of Streptococci and Colon Bacilli. E. C. Rosenow, Chicago.
61 Spirochetal Infection of Ulcers in China. H. E. Eggers, Shanghai, China.
62 Relation of Number of Streptococcus Lacticus to Amount of Acid Formed in Milk and Cream. P. G. Heinemann, Chicago.
63 Bacteriemia Due to Bacillus Diphtheriae. Report of Case. H. W. Wade, New Orleans.
64 Complement Fixation in Diagnosis of Gonococcal Infections. E. E. Irons and H. K. Nicoll, Chicago.
65 Method of Transmitting Blood Parasites. J. A. Kolmer, Philadelphia.
66 Production, Through Immunization of Specific Ferments Against Bacteria as Detected by Abderhalden Test. G. H. Smith, Glenolden, Pa.
67 Production and Detection of Specific Ferments for Typhoid-Coli Group. G. H. Smith, Glenolden, Pa.
68 *Study of Correlation of Agglutination and Fermentation Reactions Among Streptococci. I. J. Kligler, New York.
69 *Diagnostic Value of Intracutaneous Injection of Diphtheria Toxin (Schick Reaction). G. H. Weaver and L. K. Maher, Chicago.

52. **Mechanism of Phagocytosis.**—Following observations on the adhesive character of the surface of certain amebae and certain vertebrate leukocytes by Kite, experiments were undertaken by Kite and Wherry which show that when separately incubated mixtures of leukocytes and serum and serum and bacteria are agitated together many of the bacteria stick to the leukocytes and are rolled into their substance. That the bacteria are actually within the cells is judged by observations on their digestion as shown both in fresh and in stained preparations. By this method, several

of the classical experiments on phagocytosis have been repeated. Experiments with a minimum amount of agitation show that here "phagocytosis" is reduced.

Kite and Wherry offer the suggestion that foreign particles, as carbon, are taken up by leukocytes because the latter have sticky surfaces; that bodies similar to many bacteria stick to leukocytes best in the presence of unheated serum because they adsorb something from the serum which makes them more sticky or are in some way rendered more sticky, and hence the chances of their adhering to the surfaces of leukocytes are increased. There is evidence that, even in the absence of serum, certain leukocytes ar sticky enough to allow some bacteria to adhere. Preliminary experiments on the influence of temperature on the power of serum to make staphylococci sticky seem to indicate that this may occur as well at 11 C. as at 37 C., but that the action is diminished considerably at 1 C.

53. **Technic for Wassermann Reaction.**—Ottenberg and Frazier emphasize that if attention is not paid to natural amboceptor a certain, though small, percentage of positive results will be overlooked. If Thomas and Ivy's method of titrating complement is used, it is essential to select negative serums which have no natural amboceptor.

54. **Immunizing Effects of Tumor Cells.**—Seelig and Fleisher conclude that both intraperitoneal as well as subcutaneous tumors have a mutual inhibiting action on each other if they are virulent or moderately virulent, but that an intraperitoneal tumor has a relatively stronger inhibiting power than a subcutaneous tumor. The greater inhibiting action of an intraperitoneal tumor on a subcutaneous tumor appears when compared with the action of a first subcutaneous tumor on a second subcutaneous tumor, as well as on a second intraperitoneal tumor. A second intraperitoneal tumor is relatively more strongly inhibited by a first subcutaneous tumor than is a second subcutaneous tumor.

55. **Distribution of Tetanus Bacillus.**—The tetanus bacillus, Noble states, appears in the intestines of many normal animals, especially of the herbivora, but apparently it seems impossible, with the methods at our disposal, to detect it there unless it is present in relatively large numbers. Experimental evidence shows that the tetanus bacillus may multiply in the intestines of such animals. The intestines, or rather the intestinal contents of certain individual animals, seem to offer especially favorable conditions for the growth of the tetanus bacillus; such animals are "tetanus carriers" comparable, in regard to the distribution of the organism, with typhoid or cholera carriers among human beings. The presence of tetanus spores in soils, street dust, fresh vegetables, and on clothing and the skin in undoubtedly due to fecal contamination.

56. **Syphilitic Leptomeningitis.**—While it is not assumed by LeCount and Dewey the minute scars in the cerebral leptomeninx in all the instances studied by them (55) were caused by syphilis, for other infections may be responsible for them, nevertheless, they believe that a review of all the evidence presented will convince others, as it has them that it will be necessary to exclude syphilis before associating these scars with other infections. They bring further evidence of the truly focal character of the lesions of acquired syphilis and should be given a value equal to lesions in other places, as the aorta or liver, in the final summing up of the evidences for a syphilitic infection obtained by post-mortem examination.

It seems likely that in many instances when syphilis becomes generalized in the human body, perhaps at the time when there is a macular rash, fever, and perhaps a spirochetemia, that among other places in which the organisms locate, proliferate, and produce gummas are the membranes of the vertex as well as the base of the brain. Like the scars and minute gummas in the very periphery of the hepatic circulation just beneath the capsule, which are so common in the liver, these arachnoid scars show that the arachnoid is one of the relatively few places in which the organisms find conditions suitable for a limited multiplication after a generalized spirochetemia. In conclusion, LeCount and Dewey call attention to the inadequate character of the evidence that alcohol may produce a fibrous leptomeningitis with discrete focal lesions.

57. **Cultivation of Virus of Vaccinia.**—Cultural experiments made by Steinhardt and Grund with the virus of vaccinia, with usual or special bacteriologic methods, were negative. There was no evidence of a multiplication of the virus. The virus, streaked on agar plates and kept anaerobically, has remained alive for eight weeks at 33 C. An acid reaction of medium appears favorable to the virus. A comparative study of the action in the cold of glycerin on organisms of a known nature shows the resistance to be a variable one, not always paralleled by resistance to drying. Of the organisms tested, the tubercle bacilli were the most resistant, then the staphylococci and colon bacilli.

60. **Bacteriology of Appendicitis.**—Cultures from the removed appendix were made by Rosenow in fourteen cases of acute appendicitis and six cases of chronic appendicitis. Streptococci, usually in predominating numbers, were isolated from the tissues of the appendix in seventeen cases. The colon bacillus was found in pure cultures in the pus within the lumen in six cases and in predominating numbers, but with streptococci or other organisms in the rest. The results of the cultures from the wall, after thorough washing, showed that here the chief bacteria were streptococci. The fusiform bacillus was isolated from the wall of the appendix in three cases; other anaerobic bacilli and spirilla were found in some cases, but were not identified; the bacillus welchii in two; a diphtheroid bacillus in two, the staphylococcus aureus in one; the bacillus pyocyaneus in one, and unidentified cocci and bacilli in two.

The results of Rosenow's experiments indicate that appendicitis, in the absence of foreign bodies, commonly is a hematogenous infection, secondary to some distant focus; that it develops when, for some reason or other, the organisms in the focus, usually streptococci, have acquired an elective affinity for the appendix and at the same time gain entrance into the circulation. The results bear out his theory that a focus of infection is to be looked on, not only as the place of entrance of bacteria, but also as the place in which they may acquire the varying affinities necessary to infect distant organs and tissues.

From the results in the animals, it seems, as emphasized also by others, that appendicitis is a serious disease, not so much on account of the virulence of the infecting microorganisms as on account of the anatomy of the appendix favoring strangulation and thus the growth especially of facultative and strict anaerobes. The importance of thorough search for and removal of possible foci of infection from which appendicitis may originate is emphasized. Finally, it is pointed out that the frequent occurrence of appendicitis, at times almost in epidemic form when throat infections are particularly prevalent, now is easily understood.

68. **Agglutination and Fermentation Among Streptococcus.**—Sixty strains of streptococci from various pathologic conditions were studied by Kligler with respect to their agglutinative and fermentative properties. The agglutination reaction was not found to separate the streptococci into large groups. However, by its correlation with the fermentation reactions, the probable relationship of these types is indicated. The agglutination tests tend to show that a division of the streptococci on the basis of hemolysis is not warranted, whereas a separation according to the fermentation reactions appears to coincide more closely with their natural relationship. The groups suggested are:

Streptococcus pyogenes.—Salicin fermenters. *Streptococcus salivarius.*—Raffinose fermenters. *Streptococcus fecalis.*—Mannite fermenters.

69. **Diagnostic Value of Schick Reaction.**—According to Weaver and Maher in normal persons a negative result from the intracutaneous injection of diphtheria toxin constantly indicates the presence in the blood of diphtheria antitoxin with a consequent immunity to diphtheria, at least for the

time being. A typical positive result points to an absence of antitoxin and a resulting susceptibility to infection by diphtheria. In the presence of exposure to diphtheria, immunization by injections of antitoxin is not indicated in persons who give negative reactions, but only in those who give positive reactions. Intracutaneous injections of diphtheria toxin are valuable in separating cases of infection by diphtheria bacilli from cases of angina and rhinitis due to other causes. They also serve to distinguish cases which are diphtheria from those which are only bacillus carriers. Diphtheria bacillus carriers usually develop relatively large amounts of antitoxin in the blood. In the acute stage of diphtheria, before any antitoxin has been injected, the patient's blood contains little or no antitoxin. In cases of acute diphtheria, full doses of antitoxin given simultaneously with the toxin injection, frequently modify or completely inhibit the cutaneous reaction.

Lancet-Clinic, Cincinnati

March 13, CXIII, No. 11, pp. 279-306

70 Constipation in Relation to Various Diseases. C. A. L. Reed, Cincinnati.
71 Modern Radiotherapy in Malignant Tumors and in Localized Tuberculosis. G. Kolischer, Chicago.
72 Radium in Treatment of Cancer of Uterus. J. L. Ransohoff, Cincinnati.
73 Colon Stasis. J. R. Eastman, Indianapolis.
74 Insanities of Puerperal State. F. W. Langdon, Cincinnati.
75 Resection of Posterior Roots for Cure of Little's Disease. E. M. Blahd, Cleveland.

March 20, No. 12, pp. 307-342

76 *Gastric and Duodenal Ulcer; Etiology, Diagnosis and Present-Day Treatment. C. W. Dowden and C. Weidner, Jr., West Baden, Ind.
77 *Use of Abderhalden Reaction with Normal and Pathologic Human Serums. E. L. Ross and H. D. Singer, Kankakee, Ill.
78 Personal Results in New Methods of Medical Diagnosis and Treatment. E. Zueblin, Baltimore.
79 Autobiography of an Inmate. E. A. Fennel, Cincinnati.
80 Democracy and Medical Education. H. S. Pritchett, New York.

76 and 77. Abstracted in The Journal, Nov. 14, 1914, pp. 1786 and 1787.

Kansas Medical Society Journal, Topeka

March, XV, No. 3, pp. 71-104

81 Retrodisplacement of Uterus. L. A. Clary, Hutchinson.
82 Appendicitis in Children — Surgical Problem. E. D. Ebright, Wichita.
83 Splenectomy. Report of Case. P. Christmann, Parsons.
84 Would Medical Profession Suicide? T. A. Stevens, Caney.
85 Physician's Business Methods. M. Miller, Newton.

Medical Record, New York

April 3, LXXXVII, No. 14, pp. 547-588

86 Relation of Hernia to Workmen's Compensation Law. A. V. Moschowitz, New York.
87 *New Non-Operative Treatment of Disease of Accessory Sinuses of Nose. L. A. Coffin, New York.
88 Study of Chronic Appendicitis. C. Savini, New York.
89 Bugbear of Drug Eruptions. W. P. Cunningham, New York.
90 Dangers of Impure Air. H. Greeley, Brooklyn.
91 Physician's Interests in Workmen's Compensation Law. H. S. Stark, New York.
92 Permanent Enlargement of Contracted Pelvic Outlet. F. D. Smith, Chicago.

87. **Non-Operative Treatment of Disease of Accessory Sinuses of Nose.**—By means of positive pressure obtained from an oxygen tank Coffin throws medicated vapor well into the nasal accessory sinuses. After all the pus or mucus that can be obtained by suction has been taken from the cavities, and the nasal chambers proper have been thoroughly cleaned. By using for a time alternating suction and pressure currents much more pus can be obtained. The pressure current seems to sweep it off the walls of the cavities as it were and into such position that the suction current can pick it up.

Michigan State Medical Society Journal, Grand Rapids

April, XIV, No. 4, pp. 213-250

93 Some Phases of Surgery of Sigmoid. L. J. Hirschman, Detroit.
94 Syphilis—Its Modern Status. C. W. Hitchcock, Detroit.
95 Syphilis—Its Modern Status from Standpoint of Internist. W. M. Donald, Detroit.
96 Syphilis from Neurologist's Point of View. W. Taylor, Detroit.
97 Prevention, Diagnosis and Treatment of Early Syphilis. H. R. Varney, Detroit.
98 *Painless Method of Intramuscular Injections of Mercury Salicylate. C. L. Candler, Detroit.
99 *Effect of Pituitary Substances on Fever Pulse. A. W. Hewlett, Ann Arbor.
100 Acute Alcoholic Hallucinosis in General Paralysis with Additional Complication of Herpes Zoster Following Intraspinous Injection of Salvarsanized Serum. R. H. Haskell, Ann Arbor.
101 Roentgen Ray Diagnosis of Peptic Ulcer. J. G. Van Zwaluwenburg, Ann Arbor.
102 Case of Dermatitis Herpetiformis. J. H. Stokes, Ann Arbor.

98. **Painless Method of Intramuscular Injections of Mercury Salicylate.**—Candler uses a 10 per cent. solution of mercury salicylate in liquid petrolatum and 1 grain of novocain to the ounce. Of this solution he usually injects 1 c.c. which contains approximately 1½ grains of mercury salicylate and 1/32 grain of novocain, using an ordinary steel slip-on needle, gage 26 and length 4 cm. with a ground-glass syringe. Insert the needle separately, then wait a second or two to determine whether or not one has accidently hit a vein and then attach the syringe and inject the mercury. The application of a hot, moist towel following the injection favors the early absorption of the mass and together with the novocain practically eliminates all pain and tenderness.

99. **Effect of Pituitary Substances on Fever Pulse.**—Pituitary extract, Hewlett says, is the only drug which will convert the abnormal pulse form so frequently seen in fever into a relatively normal pulse form. Whether it will prove of value in febrile collapse can only be determined by actual trial at the bedside.

New Mexico Medical Journal, Las Cruces

March, XIII, No. 6, pp. 187-222

103 Acetonemia; Report of Case. F. W. Noble, Tucumcari.
104 Sarcoma of Kidney. S. W. Swope, Deming.
105 Anatomic, Clinical and Surgical Considerations of Tonsil. J. J. Pattee, Pueblo, Colo.
106 Certain Protozoal Infections of Digestive System. E. C. Prentiss, El Paso, Tex.
107 Many Years Professional Experience in Aztec Land — Mexican Republic. G. F. Brooks, Las Cruces.

New York Medical Journal

April 3, CI, No. 14, pp. 653-708

108 *Modern Treatment of Diabetes Mellitus. J. Tyson, Philadelphia.
109 Growth and Overgrowth. P. G. Woolley, Cincinnati.
110 *Two Cases of Subpectoral Abscess. D. Riesman, Philadelphia.
111 Suggestions as to Blood Cultures. W. Lintz, New York.
112 Sex Gland Implantation. G. F. Lydston, Chicago.
113 Action of Spartein. G. E. Pettey, Memphis, Tenn.
114 Multiple Fibroids of Uterus Complicated by Pregnancy. H. Grad, New York.
115 Nails as an Index in Diagnosis. W. P. Cunningham, New York.
116 Functional Intestinal Stasis: Its Cause and Effect. W. C. K. Berlin, Denver.
117 *Boiling Water in Hyperthyroidism. J. C. O'Day, Portland, Ore.

108. **Modern Treatment of Diabetes Mellitus.**—As to medicines in the earlier stages of diabetes, Tyson says, they have not much value; still less in the later stages. Their utility has been for the most part determined empirically. The administration of salicylates is followed at times by a temporary reduction in the amount of sugar in the urine, especially in cases in which there is much muscular pain. Opium and its alkaloids, morphin, codein and heroin are effective, probably because of their sedative effect, lowering the stimulus sent down from the central nervous system to the "sugar factory." The bromids may act similarly. On the other hand, the opiates generally constipate, and constipation is a drawback to successful treatment, while the possibility of acquiring the opium habit must always be borne in mind.

Arsenic is of some value in a few cases. If a glycosuria is produced by a syphilitic brain tumor, iodid of potassium will reduce it; but such an affection can hardly be called diabetes mellitus. In prescribing arsenic, it is better to give doses so small that they may be kept up continuously, rather than large doses that must be interrupted by the physiologic effect.

Certain mineral waters have a reputation. Those which are effectual in a degree are alkaline. Their operation is probably similar to that of sodium carbonate. They should be freely drunk. Additional effect is doubtless produced by

the diet provided at the various springs and the relaxation due to absence from the cares and responsibilities of business life. An important measure in the treatment of diabetes is rest, especially in bad cases. Its efficiency is easily shown by urinalysis, before and after a rest of a couple of days in bed.

110. **Subpectoral Abscess.**—The constitutional symptoms of subpectoral abscess from the very beginning, Riesman states, are out of proportion to the local manifestations. This is due to the fact that the streptococcus is the causative organism and that the free lymph circulation of the thorax permits of easy dissemination of the infection. In the treatment of subpectoral abscess the question arises whether it is better to wait for definite localization of the pus or to make an incision as soon as the diagnosis is established. The question can no doubt be settled best by surgeons, but Riesman believes it is wiser not to wait, but to make at once a free incision.

117. **Boiling Water in Hyperthyroidism.**—Two cases are cited by O'Day in which glycosuria and enlarged thyroid were associated. In each case the diabetic condition disappeared in direct ratio with the steps of the boiling water destruction of the thyroid, according to M. F. Porter's method.

Surgery, Gynecology and Obstetrics, Chicago

April, XX, No. 4, pp. 381-500

118 *Futility of Arteriovenous Anastomosis in Treatment of Impending Gangrene of Lower Extremity. D. Stetten, New York.
119 Local Infection Due to Intravascular Dissemination of Bacteria; Association of Diphtheroid Bacilli with Various Disease Conditions. E. C. Rosenow, Chicago.
120 Case of Chorio-Epithelioma Malignum Complicating Two-Months' Pregnancy and Degenerated Uterine Fibroma. J. W. Bovée, Washington, D. C.
121 *Unusual Hematoma Following Labor. C. W. Wahrer, Fort Madison, Ia.
122 *Intestinal Polyposis. W. C. Carroll, Rochester, Minn.
123 *Kinetic Theory of Peritonitis. G. W. Crile, Cleveland.
124 *Sarcoma of Both Ovaries in Child of Three Years. F. H. Smith and J. C. Motley, Abingdon, Va.
125 Excessive Mortality of High Intestinal Obstruction. Report of Cases. W. W. Grant, Denver.
126 Giant Cell Tumor of Bone. F. G. Connell, Oshkosh, Wis.
127 Roentgen Diagnosis in Gynecology with Aid of Intra-Uterine Collargol Injection. I. C. Rubin, New York.
128 *Case of Hemangio-Endothelio-Blastoma of Stomach. J. G. Sherrill and F. S. Graves, Louisville, Ky.
129 Case of End-To-End Anastomosis of Axillary Artery. E. O. Grant, Louisville, Ky.
130 Ten Cases of Arthritis of Joints of Hand Following Colles' Fracture. P. Le Breton, Buffalo.
131 Intragastric Adhesion. Report of Case. C. H. McKenna, Chicago.
132 Thrombosis and Embolism. A. McLean, Detroit.
133 Ureter Stones; Technic of Their Removal by Cystoscopic Methods. Report of Cases. B. Lewis, St. Louis.
134 Complete Dislocation of Inner End of Clavicle. W. L. Brown and C. P. Brown, El Paso, Tex.
135 Surgical Experiences in Puerperal Sepsis. A. Schwyzer, St. Paul, Minn.
136 Prostatectomy Under Local Anesthesia. C. W. Allen, New Orleans.
137 Hemostatic Safety Pin for Use in Cranial Surgery. L. Friedman, New York.
138 *Plaiting Round Ligaments. S. F. Wilcox, New York.
139 Case of Tumor of Carotid Body. C. Collier, Memphis.
140 Destruction of Spinal Cord by Molecular Vibration. Report of Case. A. P. Butt, Davis, W. Va.
141 *Simple Method of Establishing Vaginal Drainage. J. C. Wood, Cleveland.
142 Practical Obstetric Bed. E. Cary, Chicago.

118. **Arteriovenous Anastomosis in Impending Gangrene.**—The utility of arteriovenous anastomosis as a therapeutic measure, Stetten says, is open to grave question. He shows by experiments that the arterial circulation to the periphery, even in very advanced arterial disease, is in every respect better and easier than the retrograde venous circulation, mainly because of the obstruction offered by the valves and the short circuiting of the blood through anastomoses of neighboring venous collaterals. The operation is dangerous and the results have been most unsatisfactory except in a very small percentage of cases. The few so-called successful results, Stetten says, have probably been obtained more in spite of than because of the operation, inasmuch as various factors play a rôle in the improvement of these cases, as improvement has been recorded after definite closure of the anastomosis, and as failure has occurred with perfect patency of the arteriovenous fistula. Even if the anastomosis functionates, which it rarely does, there is no possibility of circulatory improvement, but rather quite the reverse. The term "reversal of the circulation," at least as far as clinical cases are concerned is termed absurd. Even if the usefulness of the operation were proved beyond question, the possible indications would be restricted to an unappreciable minimum. Stetten advises that this procedure be entirely eliminated from our surgical repertoire.

121. **Hematoma Following Labor.**—In Wahrer's case the exact origin of the bleeding was not determined with certainty; it may have been due to an incomplete rupture of the uterus or may belong to the class of large hematomas without uterine lesion.

122. **Intestinal Polyposis.**—A resection was done of the affected portion of bowel in the case cited by Carroll. It included 6 inches of the ileum, cecum, ascending colon and a portion of the transverse. The entire mucous membrane was covered with growths, some of which formed small rounded elevations; others on long pedicles, which varied in length and size, while in many places branched filaments were found. Microscopically the mucous membrane consisted of one layer of columnar epithelium similar to that which lines the normal intestine. There was a marked increase in the glands, and they were long, tortuous and branched. These glands were lined with columnar epithelium, among which were a great many goblet cells. In certain areas retained secretion, clinging to the surface of the cells were seen. Blood vessels showed some congestion, and the whole thickness of the specimen showed a distinct infiltration of lymphocytes.

123. Abstracted in THE JOURNAL, Jan. 31, 1915, p. 404.

124. Abstracted in THE JOURNAL, Nov. 28, 1914, p. 1978.

128. **Hemangio-Endothelio-Blastoma of Stomach.**—Some time prior to consulting Sherrill the woman whose case is reported fell, striking her epigastrium against the corner of a table. Soon after this she began to complain of loss of appetite, nausea, symptoms of indigestion and epigastric discomfort. She was tender over the region of the stomach and a palpable thickening could be felt in the epigastrium. The mass moved up and down with respiration. At times it could not be felt. Later a diagnosis of gastric ulcer was made and the patient was sent to the hospital with a view to bringing her into condition for operation if relief did not follow treatment. Rest in bed, carefully selected diet, and treatment of the ulcer brought prompt improvement. Subsequently this improvement seemed to be hastened by antisyphilitic treatment.

Oct. 4, 1914, the mass had reached almost the size of a kidney and had the wide range of mobility seen in floating kidney. On opening the abdomen on Oct. 5, 1914, a reniform mass growing from the greater curvature of the stomach near the pylorus and covered by the greater omentum presented to view. This mass was mottled, purplish in color and had a rather broad attachment to the stomach. A portion of the stomach about 4 inches in length along the convex border and 2½ inches along the concave border was removed, together with the mass and a portion of the upper part of the duodenum including the pylorus, and the gastroduodenostomy was completed in the usual manner. Examining the growth after its removal, three small openings in the mucous membrane were noted, one of which extended entirely through the gastric wall and communicated directly with the inside of the growth. Through this opening the little finger could readily be passed. The center of the growth seemed to be broken down but contained only delicate tissue and no appreciable fluid. The microscopic diagnosis was hemangio-endothelio-blastoma.

138. **Plaiting Round Ligaments.**—Wilcox's addition to Martin's operation consists of passing the small end of each ligament several times through the thick part of the other one, and, to make the hold doubly sure the end of each ligament may be threaded back through itself. The two

ligaments are then stitched together with a few sutures of ten-day chromicized catgut and the wounds closed. These sutures should pass parallel with the long axis of the ligament so that the circulation shall not be cut off.

141. **Simple Vaginal Drainage.**—A large-sized full curved Pean forceps is converted into a trocar pointed instrument, with a hole drilled transversely through its tip large enough to care for a medium-sized catgut ligature. When it is probable that vaginal drainage will be required, the vagina is sterilized and all necessary work from below completed. A short, full curved needle with a No. 0 plain catgut is carried through the mucosa of the posterior fornix at a point in which the culdesac of Douglas can be most easily and safely penetrated. This ligature is now carried through the opening in the tip of the forceps and firmly tied, the point of the instrument being thus held in close proximity to the mucous membrane in the posterior fornix by a ligature easily broken.

The forceps should be long enough to project some 6 or 8 inches from the vaginal ostium. The catgut is only strong enough to hold the instrument in position, while the work from above is being completed. After its completion, and under the eye and touch of the operator, a nurse, who need not necessarily be sterile, is instructed to pass her hand under the protective sheets from below, force the blades of the instrument into the culdesac of Douglas, and expand them so as to make the vaginal opening large enough to draw into the vagina a strip of gauze or a drainage tube, as the case may require. In case drainage from below is not deemed advisable, the forceps can be easily withdrawn without the least danger of disturbing the uterus, providing a No. 0 or a No. 00 catgut is used.

Tennessee State Medical Association Journal, Nashville

February, VII, No. 10, pp. 403-442

143 Nitrous Oxid Oxygen Anesthesia. E. R. Zemp, Knoxville.
144 Report of Cases of Abdominal Surgery. C. P. Fox, Greeneville.
145 Syphilis of Liver. W. A. Oughterson, Nashville.
146 Diagnosis of Gastric and Duodenal Ulcers. W. C. Dixon, Nashville.
147 Catarrhal Pneumonia. J. S. Cain, Sewanee.
148 Static Foot Disorders. R. W. Billington, Nashville.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Annals of Tropical Medicine and Parasitology, London

March, IX, No. 1, pp. 1-212

1 *Leprosy: Perspective of Results of Experimental Study of Disease. H. Bayon.
2 Protein Metabolism of White Races Living in Tropics. W. J. Young.
3 Species of Paragonimus and Their Differentiation. H. B. Ward and E. F. Hirsch.
4 Mosquitos of Kabinda (Lomami), Belgian Congo. J. Schwetz.
5 Peculiar Morphologic Appearances of Malaria Parasite. J. W. W. Stephens.
6 Some Previously Undescribed Tabanidae from Africa. H. F. Carter.
7 Experiments with Salvarsan Copper in Trypanosomiasis. H. Seidelin.
8 Relationship of Quinin to Blackwater Fever. J. W. W. Stephens and W. Stott.

1. **Leprosy.**—In addition to the nodular, maculo-anesthetic and mixed types, Bayon states that a further variety of leprosy is recognizable, with thick raised patches, which may be more or less confluent and circinate, containing numerous giant cells, and very scanty acid-fast rods. In dermal nodules and corresponding lepromas of inner organs, there occur numerous matted masses of acid-fast rods, intracellularly and extracellularly situated, very slight tissue reaction and scanty giant cells. The lesions of inner organs which show caseation, necrosis or numerous giant cells of Langhans type, appear in some cases to be due to tuberculous complications. Guinea pig inoculations only can conclusively decide the nature of such appearances. Maculae show the features of slight chronic irritation due to the action of minute doses of bacterial toxins. This, in addition to the external resemblance between maculae and the erythema produced by injecting the water soluble contents of various acid-fast cultures into lepers, seems to postulate that leprotic maculae may be the result of a local reaction similar to the one resulting in von Pirquet's and similar tests for tuberculosis.

Wassermann's test is incapable of distinguishing in every case syphilis from leprosy. The same applies to Eitner's test. Noguchi's luetin test is negative in lepers whose disease is not complicated by syphilis. Leprotic serum often shows spontaneous absorption of complement. The serologic distinction of leprosy and tuberculosis is not possible in every case. Tuberculin tests may be present in lepers showing no clinical symptoms of tuberculosis. Agglutination is so far of little value owing to self-clumping of acid-fast bacteria and low titer of leper serum. The communicability of leprosy by direct and indirect contact, especially under defective hygienic conditions, has been established by numerous repeated and independent clinical observations. Leprosy, especially the macular variety, is subject to spontaneous remissions and self-cures. Chaulmoogra oil is indicated for nodular cases; cultural extract for macular lepers (as far as the present experience goes). Bayon advises the registration and sanitary inspection of lepers' habitations; segregation in asylums, settlements, or colonies; early separation of children from leprous parents; betterment of hygienic conditions in cases in which leprosy has spread extensively.

British Medical Journal, London

March 20, I, No. 2829, pp. 493-536

9 *Diagnosis and Prophylaxis of Cerebrospinal Meningitis. A. Lundie, D. J. Thomas and S. Fleming.
10 Cerebrospinal Meningitis. J. A. Arkwright.
11 *Some Simple Anaerobic Methods. P. P. Laidlaw.
12 Theory and Technic of Treatment by Radium Emanation Needles. W. C. Stevenson.
13 Smoke as Factor Complicating Carbonic Oxid Poisoning in Colliery Disasters. E. Emrys-Roberts.
14 Serious Injury to an Eye from Bursting Golf Ball. R. H. Elliott and W. S. Inman.

9. **Cerebrospinal Meningitis.**—That the disease is more widespread than is usually recognized is the claim made by the authors. They state that it probably gives fair warning of its onset by catarrhal symptoms, and often goes no further. In its second stage it may run a long non-malignant course, giving plenty of time to arouse suspicion, and, if correctly diagnosed, would probably be cured by suitable treatment. During an epidemic, routine examination of all sore throats would probably be of more value in stopping the disease than the examination of a vast number of alleged contacts, most of whom are perfectly healthy, and the examination of cases in the second stage could be made a matter of consultation. As regards the treatment of the catarrhal stage, they express some doubt as to the efficacy of spraying. Sometimes a carrier may give a positive, a negative and then a positive result in succession, and it might be urged that the swabbing was inefficient, or that the condition had recurred, or that the spraying had no effect. All these are possibilities.

The authors advocate as an adjuvant to these measures the use of an autogenous vaccine, as it is certainly a valuable help in such throat conditions. One of them prepared three such vaccines for his own use at successive stages of a pharyngitis, and each time different organisms were used, and the eventual issue was satisfactory. The most striking effect was produced by the first dose. In their view, the probability is that by the use of autogenous vaccines many flabby uvulas and throats would be restored to a healthy condition and thereby prevented from offering a safe harbor to the meningococcus. It is hard to conceive that the meningococcus ever holds undisputed possession of any mucous membrane, or ever even obtains a hold at all, unless the vitality of the membrane has already been lowered by some means or other.

11. **Simple Anaerobic Methods.**—The methods described by Laidlaw are simple, and most of them require only the usual mediums which are used in any bacteriologic laboratory. They have been tested on such anaerobic bacteria as

B. botulinus, B. tetani, and the bacillus of malignant edema. They all depend on the properties which finely divided metals possess of adsorbing gases and other simple substances. Laidlaw uses porous platinum, colloidal platinum and colloidal platinum and sodium formate.

Indian Journal of Medical Research, Calcutta

January, II, No. 3, pp. 671-821

15 Sporogony of Hemoproteus Columba. H. Adie.
16 Respiration of Culicida. S. K. Sen.
17 Fertilization in Cimex. F. W. Cragg.
18 Blood Characters: Their Variability and Interdependence. W. F. Harvey and H. W. Acton.
19 Agglutinins in Blood of Cholera Cases. E. D. W. Greig.
20 Standardization of Bacterial Suspensions by Opacity. H. C. Brown and E. W. O. Kirwan.
21 *Effect of Addition of Common Salt to Samples of Water for Bacteriologic Analysis. V. G. Raju.
22 Distribution of Goiter in India. R. McCarrison.
23 Visit to Various European Ports in Reference to Existing Quarantine and Sanitary Arrangements and Measures Proposed Against Introduction of Yellow-Fever into India. W. C. Hossack.
24 *Creatin and Creatinin. H. S. Hutchison.
25 Alimentary Tract of Cimex. F. W. Cragg.

21. **Salt in Bacteriologic Water Analysis.**—Raju's experiments show that a solution containing sodium chlorid between 4 and 5 per cent. prevents rapid multiplication of bacteria in water. Any excess over 5 per cent. causes considerable reduction in their number. It does not seem possible to find a strength of salt solution which will keep constant the total bacterial count. Therefore, this method of preserving samples cannot be depended on so far as the total count goes. In the case of fecal bacteria, a salt solution over 2 per cent. causes a reduction in the number of fecal bacteria in twenty-four hours, and a solution below 2 per cent. cannot be depended on to keep the number of fecal bacteria constant. The addition of salt for the purpose of preserving waters for bacteriologic analysis appears to be quite unreliable.

24. **Creatin and Creatinin.**—Hutchison claims that there is no evidence that creatinin is formed in the liver; were such the case one would expect that recovery from liver abscess would lead to a more or less steady increase in creatinin excretion. The direct variation of creatinin and creatin with each other and the behavior of the creatinin-creatin index point to a conversion of creatin to creatinin. This conversion occurs under food influence, namely, of carbohydrate supplied by the liver. Hutchison considers that creatin is a special metabolite of muscle protein, probably derived from some guanidin-containing amino-acid like arginin and that it is not a mere excretory product. It has the function of linking on in muscle the sugar supplied by the liver and that during muscular katabolism, the sugar is utilized to supply energy while the creatin is dehydrated in muscle to form creatinin which is excreted.

In order that this creatin in muscle may be rendered stable, sugar is necessary and if this is not forthcoming, the creatin is excreted as such. In liver abscess and hepatitis the glycogenic function is upset and hence the necessary sugar is not available, while in diabetes the muscle cannot utilize the sugar presented to it. The excretion of creatinin does not depend on muscle tonus, since it is increased in fevers when tonus is diminished, and since it is not appreciably diminished during the night when tonus is lessened. The creatinin-creatin index is applicable to many conditions other than liver abscess. It may turn out to be a useful prognostic point, its diminution pointing to an unfavorable prognosis and its increase the opposite. In hepatitis there is little or no diminution in creatinin excreted. This might be used as a diagnostic point between liver abscess and hepatitis. Hutchison is of the opinion that any case giving an excretion of more than 1 gm. per day of creatinin is extremely unlikely to be one of liver abscess.

Journal of Tropical Medicine and Hygiene, London

March 15, XVIII, No. 6, pp. 61-72

26 *Internal Treatment of Yaws. A. Castellani.
27 Bronchial Spirochetosis. J. W. S. Macfie.

26. **Internal Treatment of Yaws.**—The mixture made by Castellani contains tartar emetic 1 grain, sodium salicylate 10 grains, potassium iodid 1 dram and bicarbonate of soda 15 grains, to 1 ounce of water. This dose is given diluted in 4 ounces of water, twice daily for adults and youngsters over 14 years of age, half doses to children 8 to 14 years of age, and one-third or less to younger children. Castellani has tried the mixture in eleven cases given in the doses mentioned for ten to fifteen days, then five or ten days' rest, then another course for another five, ten or fifteen days. The results were very satisfactory in recent and fairly recent cases in which the disease had started three to twelve months previously. In very old cases the results were much less satisfactory, and could not in any way be compared with those obtained with salvarsan and neosalvarsan. Very mild symptoms of iodism were noticed in three cases, but were not sufficiently severe to stop the treatment or decrease the doses; it was, in fact, remarkable how well borne were, in most cases, the huge doses of potassium iodid given. In four patients in which Castellani increased the tartar emetic to 2 grains per dose, nausea and vomiting occurred, and the tartar emetic had to be decreased again to 1 grain per dose. No symptoms pointing to any depressing action on the heart were noted.

Castellani concludes that salvarsan and neosalvarsan are without doubt the specific drugs for yaws. When, however, for any reason an internal treatment by easily obtainable drugs is desirable, the mixture suggested may be recommended, especially in recent cases. The active drugs in the mixture are the potassium iodid, and in a very much less degree, the tartar emetic. The sodium salicylate seems to hasten the disappearance of the crusts. The presence of a large amount of bicarbonate of soda, though making the mixture very inelegant, apparently prevents to a great extent the symptoms of iodism and decreases the emetic properties of the mixture, in this way rendering possible the administration of massive doses of potassium iodid and large doses of tartar emetic. As regards other drugs tried, such as mercury and liquid arsenicalis, their action in Castellani's experience is practically nil, though occasionally such drugs may be incorporated in the mixture.

Lancet, London

March 20, I, No. 4777, pp. 583-638

28 New Psychiatry. W. H. B. Stoddart.
29 Frost-Bite in Present War. C. M. Page.
30 Treatment of Acute Emphysematous Gangrene During Present War. J. B. Haycraft.
31 Inclusion Dermoids of Pharynx. F. J. Poynton, T. N. Higgins and G. R. Pirie.
32 *Bacillus Proteus Infection. C. S. Wallace and L. S. Dudgeon.
33 *Method of Treating Gunshot Wounds of Humerus. P. B. Roth.

32. **Bacillus Proteus Infection.**—Wallace and Dudgeon cite the case of a male aged 60, who suffered from complete retention from an enlarged prostate. A three-lobed tumor surrounded by some circumferential fibers was removed by the suprapubic route. A distinct shelf of mucous membrane was left between the bladder and the cavity from which the obstructing adenomata were removed. The course was uneventful, and the general condition of the patient was excellent, although at the end of five weeks no urine was passed by the natural route. The suprapubic sinus was enlarged, a finger introduced into the bladder, and a steel sound was passed along the urethra. It was found that the mucous membrane had healed completely over the entrance of the urethra into the bladder. The sound was pushed through and the edges of the obstructing membrane were divided radially with scissors.

The patient became gravely ill, with a sustained high temperature, and very rapidly showed considerable loss of flesh. The high degree of pyrexia was associated with definite rigors. Thirteen days from the onset of this acute illness thrombosis of the deep veins of the right leg was detected, together with great edema of the surrounding tissues. On several occasions it seemed as if suppuration had supervened, owing to several very painful areas in the boggy tissue of the enormously swollen thigh. A firm, tender cord along the course of the right femoral vein could be detected for several

inches. Three weeks from the onset of the thrombosis the patient developed a severe and sudden illness affecting the cardiorespiratory system, probably due to a pulmonary embolism. Once the limit of the acute illness was reached, he began to improve distinctly, and the progress toward recovery was as rapid as the downward course had been. From both blood and urine a bacillus was obtained which was pathogenic in guinea pigs when injected intraperitoneally. It was *B. proteus*.

33. **Treatment of Gunshot Wounds of Humerus.**—The method used by Roth consists of slinging the wrist to the neck. The patient is stripped to the waist, seated on a chair, and all dressings and splints removed. He is instructed to take hold of the hand of the injured arm with his other hand, and slowly to bend the elbow, raising the hand as near to his neck as possible, with the elbow hanging down. The hand is then fixed there in the sling described by H. O. Thomas of Liverpool as the "gauge halter." To apply this sling a 4-inch flannel bandage 3 yards long is knotted fairly closely round the neck, with the two ends hanging down equally. In case in which these two ends come opposite the upper border of the wrist, the elbow being flexed in the manner described, another knot is made and one end passed in front of the wrist and one behind it. The wrist is now pushed snugly up against this knot, and the end which passed in front is turned up behind, and the end which passed down behind is turned up in front, and the two tied above the wrist again in a third knot. Some wool is introduced between the bandage and the wrist to prevent chafing. Antiseptic dressings are then applied to the wound and are kept in position around the arm with a triangular bandage. The patient is put to bed and kept propped up with pillows in a sitting position so as to allow the elbow to hang down. As soon as he feels fit enough he is encouraged to get up and sit about the ward, and even walk about in the garden, the elbow hanging down the whole while.

Archives de Médecine des Enfants, Paris

January, XVIII, No. 1, pp. 1-60

34 *Tuberculosis Not Directly Inherited. (Les notions actuelles sur l'hérédité de la tuberculose.) M. Péhu and J. Chalier.
35 *Generalized Subcutaneous Emphysema in Measles; Two Cases. H. Méry and L. Girard.

February, No. 2, pp. 61-124

36 *Malignant Syndrome in Acute Infectious Diseases. (Syndrome malin dans les maladies infectieuses.) V. Hutinel.
37 *Pellagra in Children. J. Comby.

34. **Inheritance of Tuberculosis.**—Péhu and Chalier sift the literature on this subject which has accumulated during the last few years but can find nothing to show that there is any direct inheritance of tuberculosis. The defective development that may be observed in the offspring has no specific character, but the descendants of the tuberculous undoubtedly present a receptive soil for all diseases, not especially for tuberculosis. Transmission through the placenta has been known to occur but it is so rare that this method of inheritance need scarcely be taken into account.

35. **Subcutaneous Emphysema in Measles.**—In the case of which Méry and Girard give an illustrated description, the eruption had subsided normally when the boy's cheeks and neck became puffy. The emphysema spread to cover nearly the entire body and it persisted for three days, then gradually vanishing, although crepitation was perceptible in the back for a week longer. In a second case the emphysema developed with the eruption but kept up longer. In these as in four similar cases on record the measles was of a mild form without complications. The emphysema did not cause pain but there was some difficulty in breathing.

36. **Malignant Form of Acute Infectious Diseases.**—Hutinel remarks that we cannot speak of malignant scarlet fever, as there is no single type but a whole range of types of malignant scarlet fever. He gives a historical sketch of the disease and classifies the malignant types as the fulminating, the ataxo-dynamic, the syncopal, the hemorrhagic and the tardy malignant. There have been 34 cases of the malignant type in his service during the last fifteen months in a total of 550 scarlet fever cases; in a previous series of 833 cases there were 37 that terminated fatally. The various features of the malignant types are reviewed and the complications. Recovery was the rule in the cases with destructive lesions in the throat; the defects in the tissues grew up in time and no operation was required. In this and other complications the loss of vitality in the tissues was evidently responsible for the destructiveness of the process, as the germs involved never seemed to be particularly virulent. Suppurative otitis was encountered in only 15 cases and it usually healed without complications, but in 4 cases mastoiditis developed.

37. **Pellagra in Early Childhood.**—This article is in the main a reproduction of Weston's "article des plus intéressants," as Comby calls it, in the *American Journal of Diseases of Children*.

Beiträge zur klinischen Chirurgie, Tübingen

December, XCV, No. 1, pp. 1-204

38 Non-Malignant Tumor in the Appendix; Eleventh Case on Record. W. E. Dandy (Baltimore).
39 Experimental Research on the Suprarenals Especially on the Function of the Interrenal Portion. S. J. Crowe and G. B. Wislocki (Baltimore).
40 Myeloid Chloroma on Both Breasts. Mont Reid (Baltimore).
41 Pigmented Giant-Cell Xanthosarcoma of the Dorsum of the Foot. F. Landors and Mont Reid (Baltimore).
42 *Migration of Foreign Bodies in the Lungs. (Das Wandern aspirierter Fremdkörper in der Lunge.) E. Schwarz.
43 *Osteoplastic Operations on the Limbs, with Special Regard to the Behavior of the Epiphyses. O. Jost.
44 Anomalies in the Sacrolumbar Region in the Roentgenogram and Their Clinical Importance. Els.
45 Herniotomies in Tavel's Service, 1909-1911. J. Züllig.
46 Experimental Deposits of Cholesterin (Xanthelasmas.) H. Hoessli.

42. **Migration of Foreign Bodies in the Lungs.**—Schwarz, the author of this article, was killed by the enemy's fire while working in a field hospital September 22. In one of the two cases he reports a metal pencil cap "swallowed the wrong way" by a boy, changed its position from the left to the right bronchus. The bronchoscope then failed to reveal it in the left bronchus—where it had been located by fluoroscopy—and tracheotomy became necessary. It was finally extracted without damage by working fine forceps into the metal cap, and spreading the blades. In another case a scrap of iron, 7 cm. long by 1 or 2 cm. wide and 1 cm. thick, had slipped into the air passages of a young man practicing to be a "sword swallower." He had cough and much sputum for months, and was treated for a catarrhal lung trouble in several hospitals, never mentioning the foreign-body episode. Finally, after two years, the Roentgen rays cleared up the diagnosis at once. The piece of iron was so heavy that it probably slid at once completely into the right bronchus, thus not inducing suffocation. It evidently had migrated further, leaving a track of cicatricial tissue behind it, until it was arrested by a rib. Where it finally lodged, in lung tissue, a pus pocket had developed. After this was opened from without and the foreign body removed, a suppurative process developed also in the lower lobe on the other side, but this healed spontaneously and the patient is now cured except for a small fistula. Flörcken has reported a similar case in which the foreign body had to be extracted by a thoracotomy, and manipulated out of the lung tissue. Hofmeister's patient, after removal of a shirt stud in this way, succumbed to metastatic abscess in the brain. Karewski had only two patients recover in his fourteen cases of thoracotomy for a foreign body.

43. **Osteoplastic Operations Involving the Epiphyses.**—Jost devotes nearly twenty pages to chronologically arranged summaries of osteoplastic operations undertaken to supply missing bones. In 67 per cent. of the 325 cases he has compiled, the patient's own bone tissue was taken for the implant, and the operation was a success in 66.8 per cent. The outcome was favorable also in 46.9 per cent. of the 71 homoplastic operations, and in 76 per cent. of the 34 heteroplastic. He compares with these cases two typical autoplastic operations on a child and a youth of 17, kept long under Roentgen control. The trouble in both cases had been a sarcoma, and there have been no signs of recurrence to date, over five and

nearly two years, respectively. These cases apparently show that the foreign-body irritation (from the transplant) is what starts the epiphysis to growing. It remains inert as long as there is no stimulus.

Berliner klinische Wochenschrift

March 1, LII, No. 9, pp. 201-228

47 *Treatment of Furuncles and Abscesses in the Axillae. P. G. Unna.
48 Special Form of Healing of Alopecia Areata. E. Kuznitzky.
49 *Operative Treatment and Cure of Total Exstrophy of the Bladder. (Blasenektopie.) F. Heinsius.
50 *Nervous Retention of Urine. J. Cohn.
51 Perirenal Cystoid in Man and Animals. M. Schmey.
52 Wounds of the Nerves in War. K. Fleischhauer.
53 Localization of Sense of Taste. (Tastsinn.) F. Boenheim.

March 8, No. 10, pp. 229-256

54 Tetanus. A. Goldscheider. Concluded in No. 11.
55 *Simplified Intravenous Technic for Infusion. (Vereinfachte Methode der intravenösen Zufuhr von Medikamenten.) E. Jeger.
56 The Mental and Nervous Status of the Wounded. (Die Psyche des Verwundeten.) A. Münzer.
57 Slight Changes in the Heart among the Troops at the Front. (Leichte Herzveränderungen bei Kriegsteilnehmern.) Vollmer.
58 The Blood-Pumping Forces Outside of the Heart. (Extracardiale Kreislauftriebkräfte und ihre Beziehung zum Adrenalin.) K. Hasebroek.
59 Generalized Form of Eczema Marginatum. W. Fischer.
60 *Typhus. (Ueber Flecktyphus.) H. Jürgens and B. Heymann.

47. **Furuncles.**—Unna recalls that all furuncles develop from the pus cocci getting into a hair follicle. The microscope shows how these cocci form at first only a narrow, hollow cylinder around the shaft of the hair, always in the center of the suppurating focus. It is thus easy to destroy them with a hot needle puncture: The skin is taken up in a fold, the furuncle at its tip, and the fold is gently squeezed for a few seconds until somewhere in the center a white, bloodless spot appears. This is the cylindrical coccus center. The direction in which the hairs grow in this region is noted, and the heated needle is plunged into the white spot, in the direction of the hair growth. The needle is introduced 3 or 4 mm. deep and the coccus focus is thus burnt out. At once the tension and the pains cease. The fold of skin is released and the burned spot is pressed with the finger. If tenderness exists the coccus nest has not been properly destroyed and the procedure should be repeated. The finest tip of the actual cautery or a darning needle run through a cork and heated in an alcohol flame can be used for the purpose. The usual crucial incision is painful and spreads the infection, it leaves a scar and requires to be dressed—all of which are avoided by the needle technic.

49. **Exstrophy of the Bladder.**—Heinsius gives an illustrated description of the technic with which he satisfactorily remedied exstrophy of the bladder in a girl of 6. His operation was based on Trendelenburg's suggestion to close the cleft by drawing the pubic bones together with a special apparatus with girdle. After the child had become accustomed to this, the sacroiliac synchrondroses were severed on each side, under chloroform, and the pubic bones forced closer and closer together. Finally one pubic bone was divided also. The cleft before treatment was begun measured several centimeters, but by the end of seven months the gap between the pubic bones was only 2 or 3 mm.; the bladder was entirely covered, and the child urinated by the natural route. Three years have passed since then and the child has developed well and lives an active normal life. The operations and care were tedious but the ultimate outcome more than repaid it all.

50. **Nervous Retention of Urine.**—After excluding all other causes, we sometimes are obliged to accept a purely nervous origin for retention of urine, although such cases are much less frequent than used to be assumed. The manometer will indicate the contracting capacity of the bladder musculature. With hypertrophied prostate, stenosis or other causes to impede the voiding of urine, the bladder walls work with extra force, and the internal pressure is above normal. When there is no mechanical obstacle, the internal pressure is below normal. Cohn illustrates this with three cases in which there was inability to void more than a small amount of urine at a time, with frequent desires. The men were 28, 34 and 41 years old and in each the bladder showed pronounced fasciculation, the coarse ridges interlacing. The knee jerk was exaggerated in all and the manometer showed subnormal internal pressure in the bladder. No organic cause for the retention could be detected, and it seemed to be of exclusively nervous origin.

55. **Simplified Technic for Intravenous Infusion.**—Jeger, writing from Przemysl, extols the advantages of the simple technic described. When there is reason to anticipate that several intravenous injections will have to be made, he has the vein exposed and ligated. It is then cut above the ligature and a rubber tube, 20 cm. long, with a silver or aluminum tube in it close to the end, is slipped into the central stump of the vein of which it thus forms an elongation. A ligature is thrown around the whole, the inner metal tube holding the lumen open. The infusion is then made in the outer end of this tube, which is kept ligated at other times. The end of the tube is cut anew each time to bring the syringe into a fresh place on the tube. It is an easy matter to go from patient to patient, when all have their tubes in place, and inject the saline or drug solution as called for. The oftener and the greater the quantity of fluid injected, the longer the interval before the walls of the vein stick together and impede the injection. He found it useful to flush the vein with saline after injecting a drug solution.

60. **Typhus.**—Jürgens deplores the presence of exanthematous typhus in many of the camps of prisoners of war in Germany. He reiterates that this disease in itself is not contagious; it seems to be transmitted exclusively by body lice. Heymann relates that he studied the development of nits in little bags which he wore in his clothes. His experiments proved that the ova of lice succumb as readily to the effects of heat, steam and sulphuric acid as adult lice. Dry heat at 60 C. for an hour kills them always. The young ones hatch out in three or four days. They are so small then that they can pass through very minute openings. If they find no opportunity to suck blood, they die off in from two to four days. Adult lice also die of hunger in from three to five days at body temperature. They survive for seven to nine days at a cooler temperature, and may hibernate a long time when it is quite cold. The practical conclusions are that clothing can be freed of vermin by leaving it in a tightly closed chest in a warm room for two weeks. Otherwise dry heat or steam is the best means of destroying lice; ironing the clothes, sprinkled or dry, heating them in an oven (not allowing the heat to be strong enough to yellow a sheet of writing paper laid in them), or in an improvised fireless cooker. Physicians must arrange their clothing so that vermin cannot get inside.

Correspondenz-Blatt für Schweizer Aerzte, Basel

March 6, XLV, No. 10, pp. 289-320

61 Modern Methods of Diagnosis and Treatment of Deafness. (Schwerhörigkeit.) F. R. Nager.

Deutsche medizinische Wochenschrift, Berlin

March 4, XLI, No. 10, pp. 273-300

62 *Permeability of the Cell Altered by Anesthetics. (Neue Versuche zur Theorie der Narkose.) R. Hober.
63 Study of the Oscillating Electric Current and Its Radiant Energy. T. Rumpf. Commenced in No. 9.
64 Canned Nutrient Mediums for Cultures. (In Büchsen konservierte Bakteriennahrboden für den Feldgebrauch.) P. Uhlenhuth and T. Messerschmidt.
65 Improved Set for Agglutination Tests. (Die Agglutinationsbatterie.) L. Neumayer.
66 Typhoid at the Front. (Besonderheiten in Verlauf und Behandlung des Typhus im Felde.) J. Grober.
67 *Vermin. (Zur Behandlung und Prophylaxe der Kleiderläuse.) Galewsky.

62. **The Nature of Anesthesia.**—Höber's research seems to indicate that a change in the permeability of the cell follows contact with an anesthetic. A small amount of the anesthetic reduces the permeability and a larger amount increases it. Anesthesia may thus be defined as an inhibition of the increased permeability which is the characteristic of the cell under normal stimulation. This phenomenon is reversible if it does not surpass a certain intensity.

67-69. **Body Lice.**—Galewsky remarks that among the many surprises brought by the war comes the fact that the extermination of vermin has now become one of the most vital problems confronting the profession.

Pinkus commends Peruvian balsam as the most convenient and agreeable means by which to ward off vermin when it is impossible to bathe and change the clothing.

Medizinische Klinik, Berlin

February 28, XI, No. 9, pp. 237-264

68 Wounds of Peripheral Nerves in War. F. Cahen.
69 *Vermin. (Die Läuseplage.) F. Pinkus. See 67 above.
70 Systematic Gymnasium Work to Hasten Recovery from Wounds. (Turnen als Heilmittel.) Winckelmann.
71 Prophylaxis of Typhoid. (Typhusbekämpfung im VII. A. K.) W. Fromme.
72 Beneficial Action of Thermal Mineral Waters on Recent Wounds. F. Krieg.
73 Vaccination at Prague against Smallpox. (Erfolge der Schutzimpfung gegen Blattern.) R. von Jaksch.

March 7, No. 10, pp. 265-292

74 Dumdum Bullet Wounds. (Dum-Dum-Verletzungen.) F. Thöle.
75 Digestibility of German War Bread. (Ueber die Bekömmlichkeit der Kriegsgebäcke und die Herstellung reinen Weizengebäcks für Kranke.) C. von Noorden.
76 Treatment of Internal Diseases in the Field. F. Munk.
77 Changes in the Heart Among the Men at the Front. (Ueber Herzveränderungen bei Soldaten.) Münter.
78 Experiences of a Surgeon at the Front. (Kriegschirurgisches aus den ersten vier Monaten des Kriegs.) J. Voigt.
79 The Soy Bean. (Die Sojabohne—ein Volksnahrungsmittel.) G. Buschan.
80 *Inheritance of Acquired Properties. (Die Vererbung erworbener Eigenschaften im Lichte neuerer Forschungen.) V. Franz.
81 *Aleukemia and Treatment of Leukemia. B. Stein. Commenced in No. 9.

80. **Inheritance of Acquired Properties.**—Franz relates a number of the results of experimental research in the last ten years which have established beyond the question of a doubt that it is possible for certain acquired properties in some circumstances to be transmitted to the offspring. The living being is able to adapt itself to its environment in a far wider range of variation than we had supposed possible until recent years, and this adaptation can be transmitted to the offspring through several generations.

81. **Leukemia and Aleukemia.**—Stein gives full details of a number of instructive cases, one showing how the leukemic process was not affected by a severe intercurrent erysipelas although the blood findings characteristic of the latter developed also. Another case of myeloid leukemia developed with the aspect of hemolytic jaundice alone, but the lack of urobilinuria and the fact that the blood corpuscles did not seem abnormally fragile soon disproved this. As certain symptoms suggested trypanosomiasis, the large spleen was punctured, with negative diagnostic results, but the man died three hours later. Necropsy revealed incipient pneumonia and a large cake of clotted blood over the spleen. There was no injury of the spleen apparent, but its tissues may have been loosened up by the pneumonia infection, and the coagulating time of the blood may have been abnormally long from the same reason. The case warns that puncture of the spleen, even with scrupulous care, is not always a safe procedure.

Another patient presented an aleukemic blood picture with typical leukemic changes in the organs. In a woman of 66, myeloid leukemic infiltrates were found scattered through the lungs as well as in the suprarenals and other organs. The rapidly progressive cachexia in this case may probably be ascribed to localization of the leukemic process in the suprarenals. The case is noticeable also for the fact that a typical leukemic clinical picture gradually blended into an almost equally typical aleukemic stage. Jaksch has reported a similar case except that the aleukemia gradually gave way again to typical leukemia. The drop in the whites from 500,000 to 30,000 occurred under thyroid treatment, but this did not modify other cases and had no effect later in this case as the leukemic clinical picture returned.

Arsenic and benzol may improve the blood picture, but the "improvement" may be merely the result of the complete exhaustion of the blood-making apparatus. In one case of the latter kind the leukocytes dropped under benzol from 225,000 to 9,000 and the differential blood count became nearly normal. Stein published the case in 1912 as an example of the efficacy of benzol treatment. The patient was a woman of 68 with myeloid leukemia. She was further treated with arsenic and regained her earning capacity. The whites continued to decrease until they numbered only 2,000, but the reds increased. This transition into a subleukemic phase and the consequent marked general improvement kept up for eight months. The woman then died of intercurrent pneumonia. The effect of benzol treatment was equally marked in the case of a woman of 38, but it was a sham improvement. The aleukemic blood picture was only simulated, the drop in the leukocyte count being produced by total breakdown of the blood-producing apparatus, with mental disturbances, hemorrhagic diathesis, and finally not a trace of coagulation in the blood.

Necropsy in the first case disclosed the typical picture of myeloid leukemia, but in the second no signs of leukemia were found, merely those of retrogressive changes in the blood-producing apparatus, atrophy and destruction—the effect of the toxic action of the benzol. The woman kept up the benzol after the prescribed course, taking it for five weeks without medical oversight. The importance of differentiating between these two types of benzol action is obvious. It is possible, as a rule, only by examining the blood and taking warning from a developing tendency to a hemorrhagic diathesis, in short, by the picture of exogenous medullary anemia of the aplastic type. The "exhaustion" blood picture presented by the second patient was monotonous, the blood cells being half segmented neutrophil polynuclear, and half lymphocytic elements. The whites had dropped to 1,000.

Wiener klinische Wochenschrift, Vienna

February 25, XXVIII, No. 8, pp. 197-228

82 Importance of Agglutination Test for Exanthematous Typhus. (Bedeutung der Widalschen Reaktion für die Diagnose der Flecktyphus.) E. Weil and W. Spät.
83 *Technic for Vaccination against Typhoid. (Schutzimpfung gegen Typhus.) P. Kirschbaum.
84 *Vaccine Therapy of Typhoid. H. Eggerth.

March 4, No. 9, pp. 229-260

85 *Vaccine Therapy of Typhoid. (Prophylaxe und Therapie des Typhus abdominalis mittels Impfstoffen.) E. Csernel, A. Marton and C. Feistmantel.
86 Gangrene of the Lungs after Wounds in War. E. Haim.
87 Vermin-Proof Over-Garment. (Ein laussicheres Uebergewand.) M. and R. Grassberger.
88 *Superposed Epidemic Diseases. (Kombinierte Infektionen mit epidemischen Krankheiten.) K. Walko. Commenced in No. 8.

83. **Vaccination Against Typhoid.**—Kirschbaum states that disturbing reactions can be avoided by allowing two weeks between the first and second inoculations and one week between the second and third. He gives as a first dose, 0.2 c.c.; the second, 0.8 to 1 c.c., and the third, 1 to 1.5 c.c.

84-85. **Vaccine Therapy of Typhoid.**—Eggerth has given this method of treatment systematically in 48 cases of typhoid, each patient receiving a single intravenous injection of 0.5 or 1 c.c. In 38 cases the effect was surprisingly good; in 8 no reaction was manifest, and 2 patients died. In the group of 38 cases the temperature ran up at once 2 or 3 degrees and kept high for several hours. Then it dropped to normal, as by crisis, often with profuse sweating, and the brain symptoms usually showed improvement. In 34 cases the temperature did not go up again, and some complicating process was evident in the other cases. In the 2 fatal cases death occurred within three hours after the injection, and enough pathologic lesions were found at necropsy to explain the fatality without incriminating the vaccine.

Csernel and Marton report encouraging results from intravenous injection of a non-sensitized polyvalent vaccine made by killing the bacteria by diluting to one-tenth with Hayem's solution. The bacteria are from a twenty-four hour culture of fifteen strains emulsified in saline. The dose of 15,000,000 bacteria is measured with the microscope.

Feistmantel uses a vaccine prepared by the Besredka method which he found effectual when fresh. It does not keep more than two weeks, but when given early in typhoid it reduced the duration of the disease to one and a half or

two weeks in the fifty-two cases in which the adequate dosage was given, namely, 0.5 loop the first day, and doubling, tripling and quadrupling this dose on the second, third and fourth days. One of the fifty-two men died, and complications developed in ten.

88. **Superposed Infectious Diseases.**—Walko relates that in the contagious disease hospital in his charge at Ujvidek, during a recent period of six weeks, in 36 per cent. of all the 212 cholera cases there was superposed dysentery, relapsing fever or typhoid. There was also a dual or triple infection in 11 per cent. of the 436 typhoid cases and in 25 per cent. of the 98 cases of relapsing fever. At Brcko nearby there was dual or triple infection in 13 per cent. of the 300 cases of typhoid. The clinical pictures presented by these superposed syndromes are described in detail. The nursing and medical force seemed peculiarly susceptible to relapsing fever. He thinks it is conveyed by body lice, the scratching of their bites forcing the relapsing fever spirochetes into the broken skin. Lice were found on every one presenting relapsing fever. One physician who had eczema of the hands developed relapsing fever in a very severe form a week after the eczema had appeared. The rigidity of the muscles with relapsing fever was often as severe as with tetanus, and there is intense pain in the muscles, but there are no reflex convulsions and the tendon reflexes are attenuated. The syndrome was mistaken for meningitis in many cases at first. The reliance in treatment is on salvarsan. A single dose of 0.6 gm. neosalvarsan often arrested the disease completely.

The combination of typhoid and dysentery seemed the most serious; the dysentery always took the upper hand and improvement promptly followed antidysentery serum treatment. Kaolin (bolus alba) also exerted a decidedly favorable influence on the disease.

Zentralblatt für Chirurgie, Leipzig

March 6, XLII, No. 10, pp. 145-160

89 Remarkable Effects of Wounds of Vessels; Three Cases. (Seltene Gefässveränderungen nach Schussverletzung.) F. Neugebauer.

Zentralblatt für Gynäkologie, Leipzig

March 6, XXXIX, No. 10, pp. 145-160

90 *Practical Experiences with Artificial Fecundation. (Ein Beitrag zu den Versuchen künstlicher Befruchtung beim Menschen.) L. Prochownick.

90. **Artificial Fecundation.**—Prochownick has had much experience in this line and mentions here twenty-two cases in which he has applied the procedure. The outlook was least favorable when the sterility was the result of old inflammatory processes, especially when the infection dated from soon after marriage. The simplest technic and rapid action are indispensable for artificial fertilization, and he never undertakes it unless three trials are to be allowed him.

Gazzetta degli Ospedali e delle Cliniche, Milan

February 28, XXXVI, No. 17, pp. 257-272

91 Derivation of White from Red Corpuscles in the Blood in Frog's Mesentery. (Derivazione dei corpuscoli bianchi dai globuli rossi del sangue, nel mesenterio della rana.) G. Bassi.

March 4, No. 18, pp. 273-288

92 Efficacy of Epinephrin in Treatment of Osteomalacia. (Puo ancora essere indicata la castrazione quale cura dell'osteomalacia?) L. M. Bossi.

March 7, No. 19, pp. 289-304

93 *Cocain Addiction. (La cocainomania.) B. Vasoin.
94 Experimental Gastric Ulcers. E. Greggio.

93. **Cocain Addiction.**—Vasoin describes the ravages wrought by this "poison for all living tissue but especially for nerve tissue," as he describes it. Experimental research has shown, he continues, that cocain suspends the activity of all living elements with which it is brought in contact. Treatment consists merely in suppression of the drug, and this is easier with cocain than with morphin. Abrupt suppression of the drug does not induce any serious accidents. There is no need to "taper off" unless the patient is much debilitated, or has heart disease or severe kidney disease. The serious symptoms following sudden stoppage of the cocain soon pass away, but there may be serious disturbances in the functioning of the bladder, heart and digestive organs for a time, and the addict can scarcely ever hope to regain entirely his former physical and mental health. Vasoin cites a case published by Marfan in which two of the four children in the family had been born after the father had become addicted to cocain, and both these children were idiots. The oldest child was bright and healthy; the second child was conceived when the addiction had first commenced, and this child was mentally sound but of feeble constitution. Then came the two idiots, the last one with hydrocephalus.

Pediatria, Naples

March, XXIII, No. 3, pp. 161-240

95 Cholesterin Content of Blood Serum with Inherited Syphilis. S. Cannata.
96 Areas of Dulness in Children's Chests. (Significato di alcune ipofonesi toraciche nei bambini della seconda e terza infanzia.) S. Maggiore.
97 The Free Hydrochloric Acid in Gastric Content in Infants. (Valore dell'acido cloridrico libero nel contenuto gastrico del lattante.) G. Finizio.
98 Paratyphoid B with Severe Jaundice in Boy of 5. R. Vaglio.
99 Fibromyxosarcoma in the Mesentery of Boy of 2. L. Chiaravalloti.

Policlinico, Rome

February 28, XXII, No. 9, pp. 285-316

100 Trauma with Tardy Perforation of the Duodenum. L. Lattes.

March 7, No. 10, pp. 317-348

101 Intramuscular Injection of Insoluble Calcium Salts. (Dell'uso di sali insolubili di calcio per via intramuscolare.) T. Silvestri.
102 Toxic Action from Boric Acid Vaginal and Rectal Injections. L. Verney.

Riforma Medica, Naples

February 27, XXX, No. 9, pp. 225-252

103 Intermuscular Fibrolipomas on the Thighs. D. Taddei. Commenced in No. 7.

March 6, No. 10, pp. 253-280

104 Rat-Bite Disease. (Le malattie da morso di topo: Sokodu-Rattenbisskrankheit.) A. Perugia and U. Carchidio. Commenced in No. 9.
105 Myeloid Leukemia: Two Cases. G. Rummo.

Brazil-Medico, Rio de Janeiro

February 15, XXIX, No. 7, pp. 49-56

106 Importance of Ophthalmology for the Public Health Service. R. Machado.
107 The Surgical Kidney. (Aspecto clinico geral do rim cirurgico.) F. Cathelin.

February 22, No. 8, pp. 57-64

108 A Brazilian Physician's Impressions of the War. (Algumas informações medico-cirurgicas da guera europea.) C. Seidl.

Semana Medica, Buenos Aires

January 7, XXII, No. 1, pp. 1-34. Last indexed July 4, 1914, p. 72.

109 Huge Fibromyoma Increasing Rapidly in Size during Gestation. (Fibroma galopante distocico.) A. Chueco.
110 Operative Cure of Perforating Ulcer in Stomach or Duodenum; Three Cases. A. Ceballos.
111 Vaccine Prophylaxis and Therapy in Tuberculosis. T. Botto.

January 14, No. 2, pp. 35-68

112 Suppuration in Lateral Sinus Cured by Ligation and Curetting. (Mastoiditis cronica; flebitis supurada del seno lateral; ligadura de la yugular interna; curetaje del seno; exploracion del cerebro; hernia cerebral. Cura.) R. Becco.
113 Larvae that Penetrate Human Skin. (Larvas parasitarias que penetran activamente a través de la piel.) S. E. Parodi.

January 21, No. 3, pp. 69-112

114 Vaccine Therapy with Non-Specific Bacteria. (Heterobacterioterapia.) F. Destefano.
115 Technic for Diathermy for the Ear. (Soporte para aplicaciones de diatermia y electricas en el oido.) C. Heuser.
116 Toxic Action of Certain Stains on Certain Protozoa. L. Guglielmelli and J. J. Carbonell.

January 28, No. 4, pp. 113-144

117 Medicolegal Testimony in Case of Dementia Praecox. T. Susini and P. B. Aquino.
118 Encysted Protozoa in the Stools. S. E. Parodi.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

March 6, I, No. 10, pp. 717-804

119 Thermo-Coagulation Treatment of Bladder Tumors; Six Cases. G. van Houtum.
120 *A Working Hypothesis as to the Origin of Cancer. (Het ontstaan van kanker.) F. A. Steensma.
121 The Pressure in the Marrow Cavity of the Long Bones in Dogs. (Over den druk in de mergholte van de lange pijpbeenderen van honden.) B. K. Boom.

120. **Working Hypothesis of Origin of Cancer.**—Steensma points to the remarkable diversity of the chronic traumas which have been found a factor in cancer, and then seeks to determine the factor which is common to all the varying forms of chronic injury of the tissues. This one common factor is that the cells directly injured by the trauma die off and others take their places. As the injury from the chronic trauma affects these also in turn, they soon die off too, and others succeed them. Thus generation after generation succeed each other with exceptional rapidity. It is known that when a culture of protozoa, for instance, keeps proliferating by fission there comes a time when the culture either dies out from the long series of fissions or else takes on a new lease of life by reproduction by conjugation. Then the following generation may differ from the preceding ones. He suggests that these biologic facts may apply to cancer. The hastening of the death of the cells by the chronic trauma, the consequent shortening of the intervals between fission, may lead to a stage in which the cells proliferate by conjugation instead of fission, and the succeeding generations may differ from the parents and grow to be malignant. Steensma's arguments make out a good case for this theory, which he offers as a working basis in cancer research.

Hospitalstidende, Copenhagen

March 3, LVIII, No. 9, pp. 201-224

122 *Removal through Petrous Bone of Tumor Involving the Auditory Nerve. (Bidrag til den translabyrintære Fjernelse af Acusticustumores.) E. Schmiegelow. Commenced in No. 8.

123 Agglutination and Deviation of Complement Tests after Vaccination against Typhoid. (Immunitetsreaktion efter profylaktisk Tyfusvaccination.) O. Thomsen.

March 10, No. 10, pp. 225-248

124 *Staining Diphtheria Bacilli for Microscopic Examination. (Om Difteribacilfarvning og direkte mikroskopisk Undersøgelse.) R. Nielsen.

122. **Improved Technic for Access to Cerebellopontile Angle.**—Schmiegelow remarks that the method of access to these tumors which Krause devised has been followed since by most other surgeons, including the six cases reported by Wimmer and summarized in THE JOURNAL, Nov. 14, 1914, p. 1797. He enters from the back, pushing the cerebellum to one side, but the distance from the skin to the seat of the tumor ranges from 6.5 cm. in children to 10 cm. in adults. The manipulation of the cerebellum and medulla is liable to damage them, with possibly arrest of the heart action and respiration interrupting the operation. Notwithstanding these dangers, 8 patients were clinically cured of 42 whose tumor had been correctly diagnosed and removed in this way up to 1910. A later compilation shows that the mortality has been reduced from 81 to 70 per cent. with the Krause technic. In 1911 Quix, an otologist at Utrecht, removed a tumor of this kind through an opening made as if for a radical operation on the ear, and Kümmel about the same time performed a similar operation. Both patients recovered, but Kümmel's has complained since of the facial paralysis left afterward, as the surgeon had deemed it necessary to sacrifice the facialis.

The comparative ease and simplicity and the absence of dangerous complications commend this method of access through the ear region, and Schmiegelow reports its successful application in two cases, described with full details as to the differentiating points and technic. The mastoid portion was opened up and the tympanum; the labyrinth was removed and a large part of the petrous portion of the temporal bone. The dilated internal auditory meatus was thus partly exposed and, after chiseling away the basal convolutions of the cochlea, a glioma the size of a hazelnut became visible and was removed in fragments. The operation lasted an hour and a half. The patient was a woman of 45 with right cochlear and vestibular paralysis, trigeminal disturbances and facial paralysis, and bilateral choked disk. The symptoms had been developing for over a year and, as a result of the operation, almost completely subsided except for the irreparable facial paralysis. The second patient was a man of 37 with severe symptoms indicating a growth in the cerebellopontile angle. They resembled in every respect those of the first patient, only being far more pronounced, except that there was no facial paralysis. In both cases there was optic neuritis on both sides, severer on the side of the tumor, and the cornea was less sensitive on this side. The oversight of the location of the tumor was markedly ample in both cases as soon as the middle ear and petrous portion had been removed. The operation although tedious, has none of the special dangers of the Krause technic.

All of the four patients treated by this "translabyrinth" method have recovered. The distance from the surface to the tumor is only half that from the rear, and the operation is extradural throughout until the final attack on the tumor itself. There is much less danger of hemorrhage and collapse than with the other technic. The greatest difficulty encountered is to avoid injury of the facial nerve if this is still normal. It was already irreparably damaged in the first case but, in the other, the efforts made to spare it lengthened the operation by an hour and the facial had to be sacrificed after all, as in Kümmel's case. If the tumor proves too large to remove through the ear region, it can be attacked from the back of the neck also. The translabyrinth method is the only one which permits the removal of a tumor starting in the internal auditory meatus. Two roentgenograms show the findings in the second case before and a week after the operation. The large gap left in the petrous bone is plainly evident. The earlier the diagnosis, of course, the better chance for success. Deafness on one side, headache, dizziness and gradual impairment of vision were the first symptoms in these cases, the latter bringing the patients to the physicians.

124. **Microscopic Examination of Diphtheria Bacilli.**—Nielsen examined under the microscope smears from 215 patients entering the hospital for suspected diphtheria or scarlet fever. Cultures made from the same smears gave positive findings in 165, and, of these, he obtained positive findings in 80 per cent. with his stain-microscopic examination. In all of the 50 negative cases the microscopic and culture methods gave parallel results. The contrast stains applied were a 1:1,000 solution of methyl violet; to 100 c.c. are added 3 c.c. of glacial acetic acid and eventually 2 c.c. of absolute alcohol; Lugol's solution, the ordinary proportions 1:2:300 and a 1:1,000 solution of neutral red. With Esbach's reagent or iodin-potassium solution the whole takes only a few seconds.

Hygiea, Stockholm

LXXVII, No. 4, pp. 161-224

125 System for Examination of the Lungs. (Några huvuddrag av den vanliga lungundersökningen.) C. E. Waller.

Ugeskrift for Læger, Copenhagen

March 4, LXXVII, No. 9, pp. 311-350

126 *Arterial Hypertension. V. Bie.

127 *Incarceration of the Epiglottis. C. Peschardt.

126. **Arterial Hypertension.**—Bie cites various data to show that there seems to be no direct connection between the blood pressure and anatomic conditions in the kidneys, although abnormal conditions in both are almost invariably found parallel. There is much to sustain the assumption that an abnormally high blood pressure is the primary disturbance; arteriosclerosis and vascular kidney affections occur only secondarily. But, he adds, even if hypertension is regarded as a secondary product, we must not assume that it is easily influenced. Slight or moderate hypertension may subside under bed rest and diet, but a high blood pressure, 200 to 250 mm., never goes down permanently to normal; 170 mm. seems to be the extreme limit with which this is possible.

127. **Incarceration of the Epiglottis.**—Peschardt's patient, a woman of 38, had long complained of difficulty in swallowing. Examination revealed enlarged tonsils and that the tip of the epiglottis had become fastened down behind them. He released it, but it speedily became incarcerated again. All disturbance ceased, however, when he burned out part of the tonsils with the actual cautery and cauterized the congested epiglottis.